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Volume 20 July 1951 Number 7

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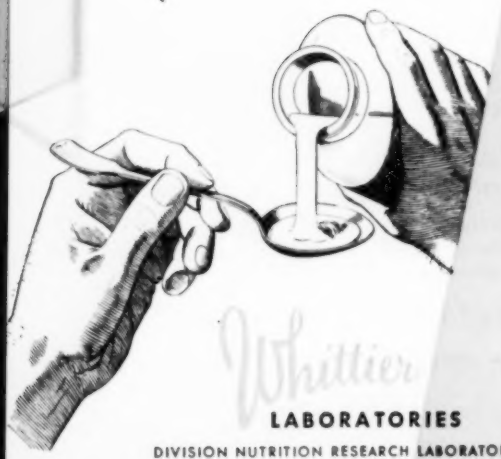

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This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

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JAMES L. THOMPSON, M.D., has been named Chief Surgeon and Director of the Medical Department of the Weirton Steel Company, at Weirton, West Virginia, succeeding LEWIS A. WHITAKER, M.D., who has retired after 23 years with the company. DR. THOMPSON was born in April, 1906; graduated at the University of Manitoba, Canada, in 1925; received his M.D. at University of Manitoba Faculty of Medicine, Winnipeg, in 1930; interned at Misericordia General Hospital and Children's Hospital in Winnipeg, and Ohio Valley Hospital, Steubenville, Ohio, 1929-32; and engaged in general practice, 1932-35. In September, 1935, he joined DR. WHITAKER at Weirton Steel, as Assistant Chief Surgeon. DR. WHITAKER will continue as Consultant to the Medical Department.

PAUL J. WHITAKER, M.D., has been appointed Medical Director of Allis-Chalmers Manufacturing Company, Milwaukee, effective July 9. DR. WHITAKER recently received the degree, Doctor of Industrial Medicine, from the University of Cincinnati.

ERNEST C. OLSON, M.D., has been appointed Chief Surgeon of the Illinois Central Railroad, succeeding DR. WILLIAM W. LEAKE, upon his retirement July 1. DR. OLSON was born at Chicago in 1897; was educated in the public schools; graduated from the University of Chicago in 1921; and received his M.D. degree from Rush Medical College at Chicago in 1923. He joined the Illinois Central Hospital that same year to serve his internship and became a member of the staff the following year. Since January 1, he has been Assistant to the Chief Surgeon.

CHARLES E. DUTCHESS, M.D., on May 22, 1951, was elected a Vice-President and a member of the Board of Directors of Schenley Laboratories, Inc. DR. DUTCHESS has been Medical Director of Schenley Laboratories since 1944. He was born in Walton, Indiana, in 1894; graduated at Purdue in 1916; received his M.D. at Indiana University School of Medicine in 1920; and served his internship at Harper Hospital, Detroit. In 1921 he established his practice in De-

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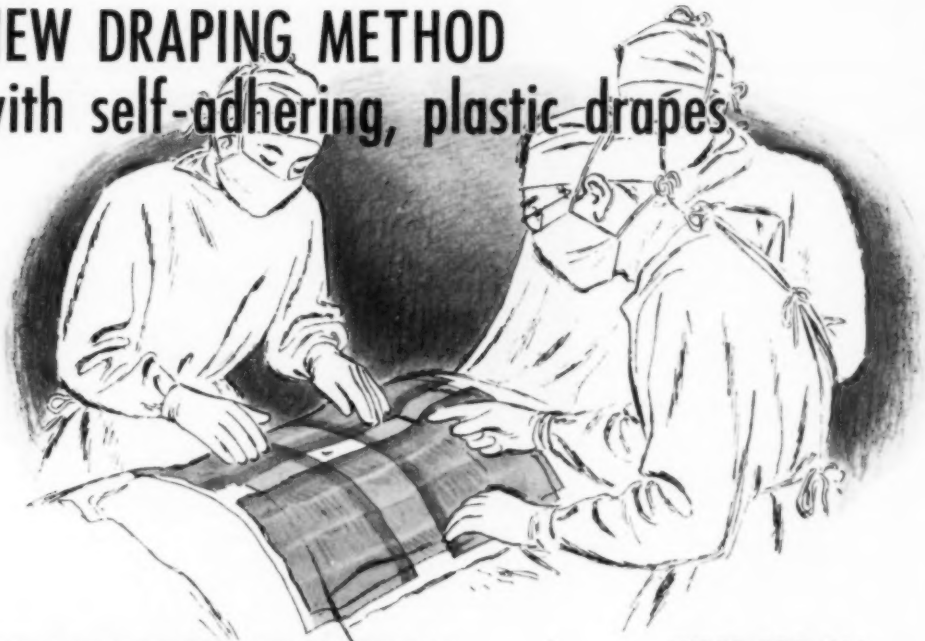

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troit. Ten years later he joined the professional service and advertising department of Parke, Davis & Company, where he remained until his move to Schenley in 1944. He is a Fellow of the A.M.A. and the New York Academy of Medicine; a member of the New York State and County Medical Societies, the Association for the Study of Internal Secretions, the American Society of Tropical Medicine, the Association of Military Surgeons, and the Pharmaceutical Advertising Club of New York. He is Chairman of the Medical Section of the American Pharmaceutical Manufacturers' Association; Chairman of the Public Relations Committee of the INDUSTRIAL MEDICAL ASSOCIATION; Past-President of the Association of Medical Directors. His headquarters will continue at the company's New York office, 350 Fifth Ave.

FRANK R. FERLAINO, M.D., Medical Director in New York for General Motors Corporation, and Assistant Clinical Professor of Industrial Medicine at the Institute of Industrial Medicine, New York University Post-Graduate Medical School, has been elected a Trustee of The Society of Medical Jurisprudence, New York City, succeeding DR. L. HOWARD MOSS, resigned. This is the first change in the Trustee personnel in the past 15 years. The Society held a meeting May 14 at which COL. HOWARD J. HUTTER, instructor in radiology, New York University-Bellevue Medical Center, New York, presented a paper on "How to 'Read' an X-Ray Film." This was followed by a discussion from the medical

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expert's standpoint by DR. SOLOMON FINEMAN, assistant clinical professor of radiology at Columbia University, New York, who also spoke on pitfalls in x-ray diagnosis. DR. FERLAINO discussed the paper from the industrial and liability examiner's standpoint.

ALBERT RIVES SHANDS, JR., M.D., Medical Director of the Nemours Foundation and Surgeon in Chief of the Alfred I. du Pont Institute of Wilmington, Delaware, has been named a member of the Armed Forces Medical Policy Council effective July 1, 1951. DR. SHANDS has been a civilian medical consultant to the Surgeon Generals of the three services. He is a graduate of the University of Virginia's Medical School; a former Professor of Surgery at Duke University; now a visiting Professor in Orthopedic Surgery at the University of Pennsylvania. During World War II, he served as a Colonel in the U.S. Army Medical Corps, and continues to hold that rank in the Organized Reserve Corps. He is an international authority on orthopedic surgery.

LEONARD J. GOLDWATER, M.D., Professor of Industrial Hygiene, Columbia University School of Public Health, was the principal speaker at a symposium on the Cardiac in Industry held June 21, 1951, at the New Haven Medical Association Building preceding the Annual Meeting of the Connecticut Heart Association. The panel for the symposium included industrial physicians, labor leaders and others concerned with the problem of rehabilitating the cardiac.

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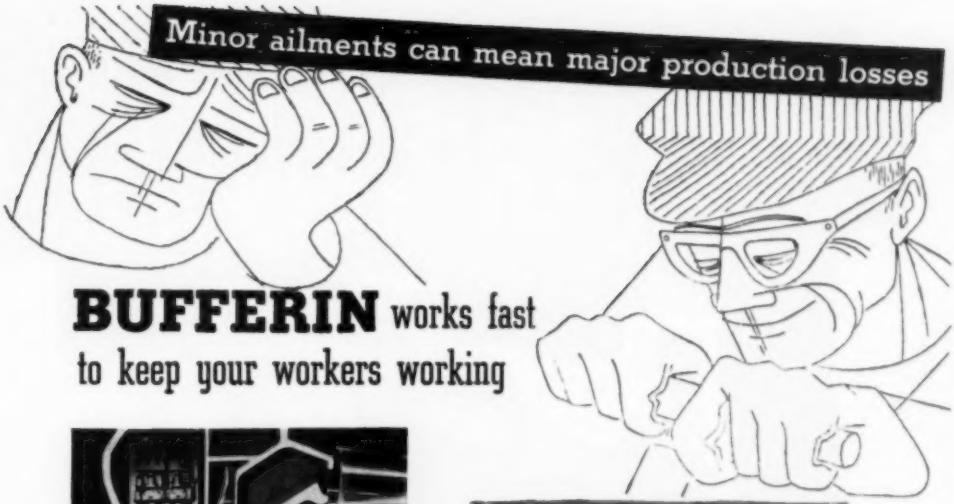

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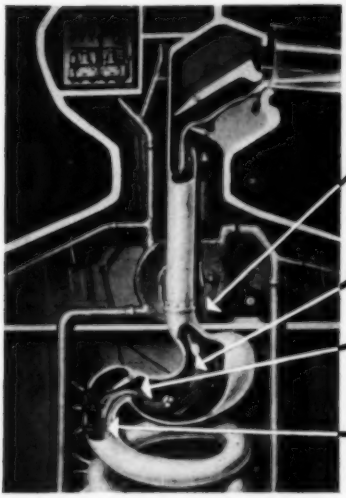

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Status asthmaticus which has defied all other therapeutic attempts may yield quickly to relatively small doses of ACTHAR.

Definite and often dramatic improvement of the patient makes ACTHAR therapy a truly economic measure in the difficult management of severe asthma.

ACTHAR Dosage.—***Initial Dose:*** Less severe cases, 12.5 mg. q. 6 h. Severe, chronic cases, including status asthmaticus, may require up to 25 mg. q. 6 h. The initial dose should be continued from 2 to 4 days or longer in severe cases. ***Tapering of Dose:*** When symptoms have been controlled, decrease dosage 5 mg. per injection every other day until a total of 10 to 12 days of therapy has been given. ***Maintenance Therapy:*** May be required in severe, chronic asthma; 10 to 20 mg. once or twice per day.

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ACTHAR is available in vials of 10, 15, 25 and 40 I.U. (mg.). The Armour Standard of ACTHAR is now accepted as the International Unit; 1 International Unit is identical with 1 milligram of ACTHAR.

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PHYSIOLOGIC THERAPEUTICS THROUGH BIORESEARCH

$\frac{dx}{dC} = K_0(S-x)^{e-At}$ $\frac{dx}{dC} = K(S-x)$ $\frac{a-x}{v}$

$\log \frac{S}{S-x} - 0.4343\frac{x}{S} = \frac{c}{K}$

It's *simply* physical

$\frac{S}{S-x} = KC$ $\frac{S}{S-x} - Ax = KC$ $\frac{a-x}{v} S = Ke^{\frac{A(S-x)}{S}x}$ $k - \frac{dx}{dc} = \frac{S-x}{x^n}$ $\frac{S}{S-x} - Ax = KC$

Diarrhea control does not require complex equations denoting physical adsorptive powers for toxins and bacteria, physical coating potentials, or hydrophilic capacity for physically consolidating stools.

℞ To achieve these goals quickly in diarrheal disturbances precipitated by dietary indiscretions, spoiled foods or intestinal allergies, the therapeutic equation simply calls for *physically* effective

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Each fluid ounce contains:

Kaolin	90 grs.
Pectin	2 grs.

Available in bottles of 10 fluid ounces.

Dosage: ADULTS — 2 or more tablespoons after each bowel movement, or as indicated.

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For Uncomplicated Ulcer AMPHOJEL provides "double gel" action: the quickly reacting antacid gel, and the prolonged local protection of the demulcent gel.

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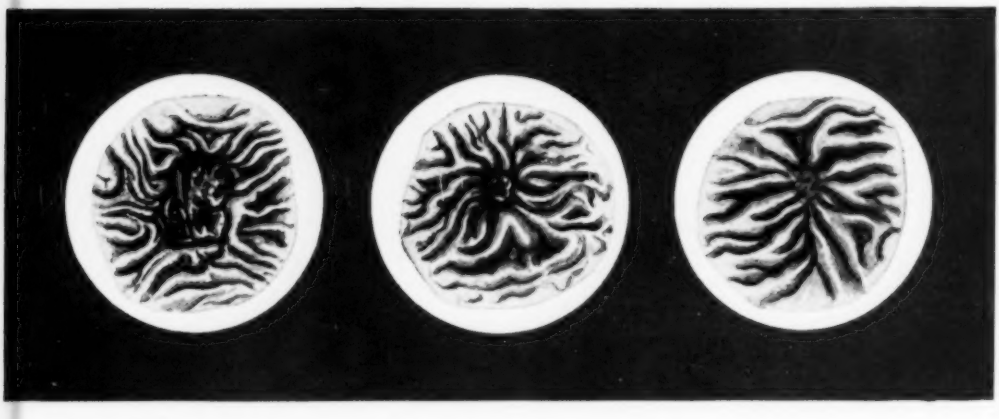

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Waife, S. O.: Medical Clinics, p. 1718, November 1949.

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(1) Carpenter, E. B.: Clinical Experiences with Chlorophyll Preparations, Am. J. Surg. 77:167, 1949. (2) Langley, W. D., and Morgan, W. S.: Chlorophyll in the Treatment of Dermatoses, Pennsylvania M. J. 51:44, 1947. (3) Moss, N. H.; Morrow, B. A.; Long, R. C., and Ravdin, I. S.: Effectiveness of Chloresium in Wound Healing and Deodorant Effects, J.A.M.A. 140:1336 (Aug. 27) 1949. (4) Bowers, W. F.: Chlorophyll in Wound Healing and Suppurative Disease, Am. J. Surg. 73:37, 1947.

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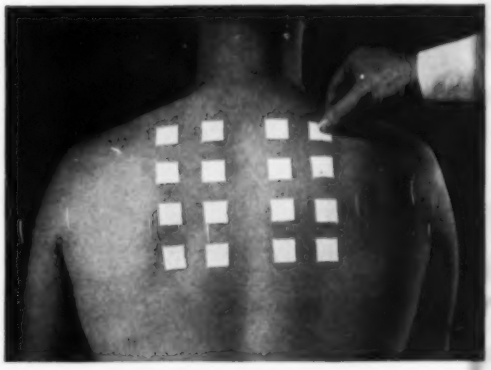
The most recent of these studies was conducted by a consulting biochemist of very substantial reputation, who was commissioned by Bauer & Black to investigate the incidence and degree of skin irritation and allergy caused by adhesive. This clinical study was made with *Curity* Adhesive and with two other leading brands. In making the analysis, a substantial sample was used, and a very careful system of checks and controls was employed to assure a thoroughly unbiased, complete and objective report.

A summary of the findings has now been compiled It verifies a fact borne out by earlier studies: viz., that *Curity* Adhesive is measurably less irritating than the other brands tested.



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8 to 24 from a single dose

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This season try longer-acting Di-Paralene in your allergy cases. Available at prescription pharmacies in 50-mg. and 25-mg. tablets in bottles of 100 and 500. **Abbott**

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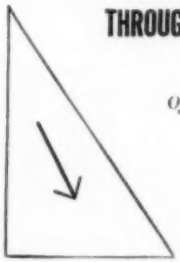
REFERENCES: Spielman, A. D. (1950), N. Y. St. J. Med., 50:2297, Oct. 1. Brown, E. A., et al. (1950), Ann. Allergy, 8:32, Jan.-Feb. Jenkins, C. M. (1950), J. Nat. Med. Assn., 42:293, Sept. Cullick, Louise, and Ogden, H. D. (1950), South. Med. J., 43:632, July. Ehrlich, N. J., and Kaplan, M. A. (1950), Ann. Allergy, 8:682, Sept.-Oct.

Patient Carries on Normal Pursuits



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of the symptoms of urinary tract infection

Throughout the course of treatment for urinary disorders many patients continue their usual activities, thanks to analgesia produced with orally administered Pyridium.

Pyridium can be safely administered concomitantly with antibiotics, the sulfonamides, and other specific therapy.

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*Kirwin, T. J., Lowsley, O. S., and Manning, J.: Effects of Pyridium in certain urogenital infections, *Am. J. Surg.* **62**: 330-335, December 1943.

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All quotations from paper presented before the 144th Annual Meeting of the Medical Society of the State of New York, New York City, Section on Dermatology and Syphilology, May 12, 1950. Peck, S. M. and Michelfelder, T. J. New York State J. Med. *50*:1934 (Aug. 15) 1950.

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1. Bain, W. A., Broadbent, J. L., and Warin, R. P.: Lancet 2:47, 1949.

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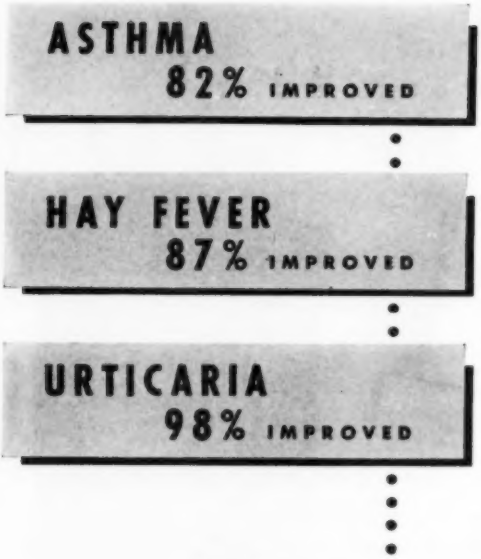

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INDUSTRIAL MEDICINE AND SURGERY
The Journal of Medicine in Industry
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Training and Certification of Industrial Physicians

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I. The Specialty of Industrial Medicine

THE special practice of medicine which is referred to in this paper as industrial medicine may be considered for the purpose of this discussion to have three synonyms: industrial health, occupational health, and occupational medicine. We mean to discuss the branch of medicine that concerns itself with the health problems that are caused or affected by occupation, or which have their solution in some aspect of occupation. The various synonyms used to designate this specialty have nuances of meaning that are real to their users, and probably are real when considered against slightly different backgrounds of training, type of work, and viewpoint of the users. The term industrial medicine seems no longer to embrace industrial hygiene which has come to be recognized as another specialty and one which has its base in the profession of engineering rather than clinical medicine. The fields of interest in the two specialties may show a considerable overlap. Indeed, they are occasionally identical. But each looks at a problem from the viewpoint of its background specialty, sees and measures component parts in a different way, and makes its special contribution to the solution. The cooperative effort of both is usually the only means by which the best solution to an industrial health problem can be obtained.

The physician entering industrial medicine must be, among other things, a good clinician. The training he has received in medical school and hospital remains his distinctive tool of work in the industrial setting. But his optimal usefulness is achieved only when he masters new ways of applying his medical training, and acquires additional knowledge. He must learn to solve health problems that manifest themselves as abnormalities in groups of people, while at the same time retaining his capacity and interest in the solution of problems of individuals. The technics of developing health data of groups of people, the proper manipulation of these data, and the drawing of logical conclusions are in principle identical with the technics of biostatistics and epidemiology as these have developed within the field of public health. The industrial physician concerns himself with the use of these technics on data that apply to the work environment as well as to clinical findings among the workers employed in that environment. Such findings may vary from frank disease to measurements of one aspect or another of a physiological function. Competent performance in the specialty of industrial medicine is premised, further, upon training in a new field of etiology, an etiology based in the physical sciences. The laws which describe the physical and chemical nature of the environment must be re-learned, this time with the view of understanding the mechanisms by which physical and chemical agents can become stress factors.

The industrial physician carries on his practice in any of three different ways: (1) Most frequently he is employed by a corporation with a sufficiently large number of employees or sufficiently serious occupational injury or disease hazards to justify his employment; or (2) he is employed in a governmental health agency; or (3) he provides industrial medical service as a private practitioner or a consultant to a number of clients. In any case, he performs as a physician whose problems have to do with groups of people as well as with individuals, and whose problems have their causes in the field of the physical sciences as well as in the biological and social sciences. His diagnostic problems can be much more difficult of solution than any he may previously have encountered in the best of training programs of clinical medicine. Irrespective of the administrative features of his job, the industrial physician concerns himself increasingly with preventive measures that can be applied within the framework of the employment situation, to the end that the groups of people for whom he is professionally responsible may experience increasing health and well being. The industrial physician may be expected to change his methods of work as time goes on, and ultimately to become a practicing physiologist rather than a clinician.

Presented before the Section on Industrial Medical Practice, INDUSTRIAL MEDICAL ASSOCIATION (formerly American Association of Industrial Physicians and Surgeons), Atlantic City, April 25, 1951.

II. Graduate Training

GRADUATE training in industrial medicine has developed as a result of the efforts of a few determined leaders in the field. These efforts have been carried on without the blessing of organized medicine, and without the guidance of any official body. In this sense, training in this specialty has paralleled the history of the specialty itself. Growth and development in each instance have been in response to a need which could not permanently be ignored.

It would be difficult to designate a specific year as the first in which advanced training in industrial medicine was offered in this country. The School of Hygiene and Public Health of The Johns Hopkins University was opened in 1918 and from the beginning offered courses in ventilation, lighting, effects of radiant energy, and industrial fatigue to physicians training for careers in public health. The amount of instruction directly applicable to industrial health offered in this course of training has steadily increased in the programs for the degrees of Master of Public Health, Doctor of Public Health, and Doctor of Science. The program of training for industrial hygienists instituted about 25 years ago at the Harvard School of Public Health has for years been open to physicians working for M.P.H. or Dr. P.H. degrees. In 1949, this school announced a one-year plan of instruction for physicians for which it offered the degree of Master of Industrial Health.

The first graduate training specifically designed to prepare physicians for the practice of industrial medicine, as this field is now understood, was offered by the Medical School of the University of Pittsburgh in 1945 under the direction of Dr. T. Lyle Hazlett. Successful students in the course, which required 18 months for its completion, were awarded an entirely new degree: Doctor of Industrial Medicine.

The post-war years saw expanding activity in this field among American universities. The Institute of Industrial Health at Kettering Laboratory in the University of Cincinnati began to enroll graduate students for a three-year period of training and to award the degree of Doctor of Industrial Medicine. The School of Public Health of Columbia University offers courses which permit emphasis upon occupational health by candidates for the M.P.H. degree. Graduates of this course may, by an additional year of work in this area and the preparation of a thesis, become eligible for the Dr. P.H. degree. Yale University has instituted a special program which includes in-plant training. This era has witnessed the creation of an Institute of Industrial Medicine in New York University and the founding of a new Graduate School of Public Health in the University of Pittsburgh which, by the terms of its endowment by the A. W. Mellon Educational and Charitable Trust, is to place special emphasis upon occupational health. The University of Michigan offers a choice of a one-year course at its School of Public Health in conjunction with in-plant training at General Motors Corporation facilities, or a two-year course which combines these features with a Council-approved residency in industrial medicine at the Saginaw (Michigan) General Hospital. The residency is described later in this paper. The newest training program is that at the University of Rochester, in which the degree of Master of Industrial Medicine is offered for the successful completion of a didactic school year followed by a year of in-plant training.

The announcements which describe these programs of training reveal that four different kinds of master's degrees and four different kinds of doctor's degrees are offered. The announcements also describe a great number of courses, some of them apparently only remotely related to the needs of the specialist in industrial medicine. A careful examination of this situation, however, suggests that the disagreement with respect to the training content is more apparent than real. Some of the disagreement has its basis in pedagogical technicalities, and a great deal more derives from difficulties in semantics. The essential content of these courses is presented later in this paper.

At the present time there are 20 physicians, all of whom are men, who are at one stage or another of graduate training in industrial medicine in this country. Four of these are citizens of foreign countries, and will take governmental or university posts upon their return. Two more will probably be employed by governmental health agencies in this country, and one will probably take employment at an Atomic Energy Commission installation. Some 12 men remain who will probably practice as specialists in the employ of business concerns in this country. Most of these men will want and some will be worthy of certification as specialists in their chosen field, and they have a great interest in the progress being made toward the creation of a specialty board in industrial medicine.

III. Certification in the Specialty

THE establishment of specialties of practice within the framework of organized medicine is the function of the American Medical Association's House of Delegates. Specialty status is officially achieved when the House of Delegates approves a specialty board for the field of practice under consideration. The House of Delegates is guided in its action in this matter by the recommendation of the American Medical Association's Council on Medical Education and Hospitals. The Council, in turn, is influenced by the recommendations of the Advisory Board of Medical Specialties. This board has its existence outside the framework of the American Medical Association, being made up of representatives of each of the specialty boards.

A group seeking recognition as a specialty board usually forms a corporation with a legal

address. This corporate body presents its case before the Advisory Board of Medical Specialties. If this body is so minded, it recommends to the Council on Medical Education and Hospitals that specialty status be granted the new group; and if the Council agrees it makes a similar recommendation to the House of Delegates where positive action is usually taken.

The first formal step toward certification of specialists in industrial medicine was taken in 1941. At that time, a board was incorporated in the state of Illinois with the title of American Board of Industrial Medicine and Surgery. The members of this incorporated group were Drs. C. O. Sappington, T. Lyle Hazlett, V. S. Cheney, F. W. Slobe, and E. C. Holmblad, all representatives of the American Association of Industrial Physicians and Surgeons. It should be said parenthetically at this point that Dr. Slobe has carried the brunt of this discouraging task for the past 10 years, and continues to be this Association's most effective worker for specialty recognition. Beginning with its first application for specialty status in 1943, all actions by the corporate group met with defeat. The problems considered insoluble at the time were: (1) satisfactory identification and definition of this specialty; (2) approved programs and facilities for graduate training; (3) composition of a suitable founders' group; (4) inclusion of surgery as part of this special field. The last proved to be an insurmountable obstacle, and is still totally unacceptable to the existing surgical specialty boards.

A memorable meeting was held in the offices of this Association on October 17, 1948. It was attended by representatives of this Association, the American Medical Association, the American Academy of Occupational Medicine, and the faculties responsible for teaching in this special field. Two important agreements were reached: (1) that the word, surgery, be dropped from the name of the specialty board, and (2) that preparation for the special practice of industrial medicine include three years of graduate training.

A decision was taken during 1950 to create the American Board of Occupational Medicine. It is expected that within a short time the name of the original corporation will be changed to this new name. If this is not practicable, the old corporation will be permitted to become defunct and an entirely new one created with the second name. The first membership of the new corporation is to consist of Drs. H. A. Vonachen, E. C. Holmblad, F. W. Slobe, Carl Peterson, and R. A. Kehoe. The group is to be expanded to a total membership of nine industrial physicians: four representatives of the American Medical Association's Section on Preventive and Industrial Medicine and Public Health, one representative of the American Academy of Occupational Medicine, and four representatives of this Association. The functions of this corporate group are primarily to gain acceptance of the American Board of Occupational Medicine as a specialty board, and secondarily to create a suitable founders' group of certificants. It is felt that a satisfactory definition of the specialty of industrial medicine has been achieved, and that the graduate training programs which recently have come into being compare favorably with the level of training required of certificants in the other medical specialties.

It may be of some interest at this point to note that a specialty board was created in 1948 which is willing to include specialists in industrial medicine among its certificants. This is the American Board of Preventive Medicine and Public Health, Inc. This board now has a total of 954 certified members. Its membership includes 23 physicians whose specialty is industrial medicine. Ten of these were admitted as founders, and 13 by examination. The existence of this board has not deterred the activities of the proponents of a board in industrial medicine.

The imminence of the next steps of board action makes necessary a critical review at the present time of the programs of training offered at the various universities as preparation for the special practice of industrial medicine.

IV. The Training Programs

As was previously indicated in this paper, the specialist in industrial medicine is basically a clinician. He must acquire new knowledge related to the disease etiology which is based in the physical sciences, as well as the technology of dealing with health problems of groups of people. These tools are to be used in programs of health maintenance and health improvement, or at the very least in programs of early discovery of unwanted cases of disease. As has been pointed out by Kehoe,[1] many of the real problems in this field are amenable to solution only by methods which can be considered applied research, and some training in the applicable research methods is an essential component of graduate training in industrial medicine. Ashe[2] has stressed that the training should include a review of the clinical subjects and technics that are of particular use in this special field, as well as a review of the basic medical sciences that pertain to it. The latter is consistent with graduate training in the other medical specialties.

A point of fundamental disagreement between the educators in this field and the American Medical Association's Council on Education and Hospitals has been that which deals with the primary location at which the training should take place. The Council has been unable until recently to accept the view that satisfactory graduate training can take place anywhere but in an approved hospital. The advocates of specialty status for industrial medicine have, in response to this view and against their better judgment, presented plans for specialty training in hospitals. When this was first done the case for specialty status fell apart, the proposed training then being indistinguishable from a

weak combination of medicine and surgery, and unworthy of specialty status in either of these fields. The difficulty was resolved by the action of the A.M.A.'s House of Delegates in session at Atlantic City in June, 1949, which gave in-plant training the status of hospital training in the specialty of industrial medicine. Shortly thereafter, a residency in industrial medicine at the Saginaw (Michigan) General Hospital received the approval of the Council on Education and Hospitals. This residency is a mixture of training services at the hospital and at certain General Motors Corporation plant medical departments, as well as at facilities located elsewhere in the community. When combined with two semesters of selected didactic courses at the University of Michigan School of Public Health, this program would seem to fulfill the requirements of two of the three full years of graduate training in industrial medicine.

Hussey and Meek,[3] and later Brown,[4] made a clear statement of what was well known for some time but never previously adequately stated. They pointed out that whereas the usual specialty training programs must be based in hospitals which make use of nearby medical schools and research institutions as auxilliary facilities, the situation with respect to industrial medicine is reversed. In this case, the base of training is preferably an institution which exists specifically for this purpose, while hospitals and medical schools are used as auxilliary facilities of major importance to the program. The validity of this concept is attested to by the preference shown for designating certain of the existing training bases as institutes of industrial medicine. Other training bases, though not formally designated as institutes, tend to function as such. These institutes of industrial medicine and their equivalents exist within the framework of medical schools, within university graduate schools, or within schools of public health. They are centers of research, and carry on a group type of consulting practice in the field of industrial medicine. Their faculties consist of clinicians, engineers, physiologists, toxicologists, chemists, physicists, statisticians, epidemiologists, health educators and administrators who have combined to create a new faculty for the advancement of a new professional discipline in a new center within the administrative structure of the university. Among other things, this arrangement facilitates the granting of proper faculty status to a diverse group of professionals who in certain of the universities could otherwise gain such recognition only in the separate schools representing their respective professions. The faculties of these institutes take primary responsibility for the graduate training of physicians in industrial medicine. They depend upon the help of associates in teaching hospitals, in other colleges of the universities with which they are associated, in other affiliated educational and social institutions, and in selected industrial plants throughout the training program.

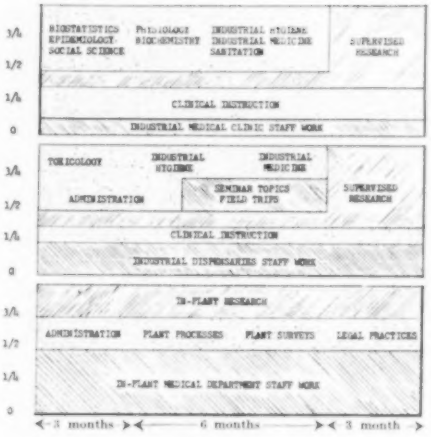

Fig. 1.

The chart schematically presents the content of three graduate years of training in industrial medicine (occupational health), blocked to scale in terms of time. Three different types of activity are identified by uniform shading: didactic instruction, supervised work, and supervised research. The first two years are spent at an institute, and the third is spent at an industrial plant medical department. Graduate training in clinical specialties is offered during the first two years at a teaching hospital within the university in which the institute is located. The didactic courses, which are named in the chart, are presented at the institute. The faculty of the institute is also responsible for the student's research, and for his work in industrial medical clinics at the teaching hospital during the first year and at industrial dispensaries during the second year. The industrial plant medical department at which the third year of training takes place is affiliated with the faculty of the institute.

Industrial medicine has its own list of basic sciences. These are: biostatistics, epidemiology, physiology, biochemistry, and sanitation, together with some representation of the social sciences, with special reference to the history of industrial organizations and institutions. The physiology under consideration here is that which deals with fitness and performance, and with man's response to environmental stress, as well as the physiology which prepares the student for an understanding of pathology. The biochemistry under consideration is that which prepares the student for industrial toxicology.

The applied sciences of industrial medicine are considered to be: toxicology, industrial hygiene and health physics, industrial medicine, and administration. No other specialty of medicine, save public health perhaps, seems to require so much didactic course work in its graduate training program. The courses listed are

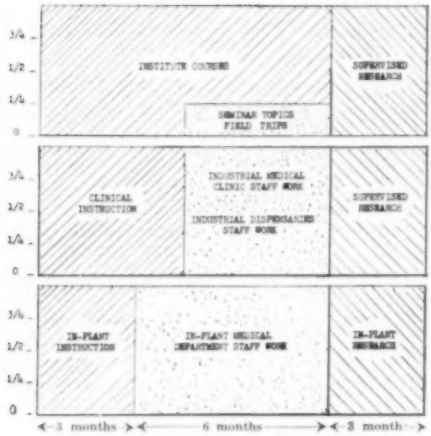

Fig. 2.

The chart schematically presents the types of activity engaged in during three graduate years of training in industrial medicine (occupational health), blocked to scale in terms of time. Three types of activity are identified by uniform shading: didactic courses and instruction, supervised work, and supervised research. The proportions of time respectively spent in these have the ratio 15:12:9. Reasonable variations in the relative amounts of time spent in the types of activity would seem to be necessary to suit the needs and opportunities of different situations. The range might extend from that shown to one in which there is much less emphasis on didactic instruction, as would be expressed in the proportions, 12:12:12.

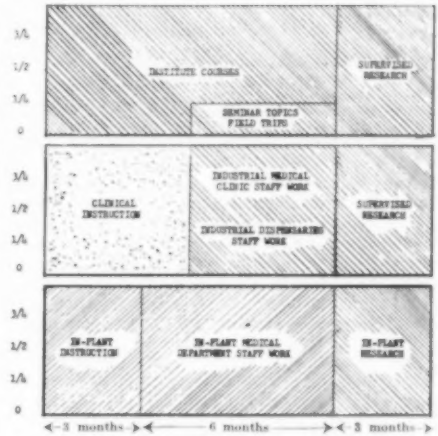

Fig. 3.

The chart schematically presents the location of primary responsibility for portions of three graduate years of training in industrial medicine (occupational health), blocked to scale in terms of time. Three locations of responsibility are identified by uniform shading; the training institute, the medical school and teaching hospitals, and the industrial plant medical department. The proportions of time for which each is responsible have the ratio 22:5:9. It is seen that the institute dominates in terms of over-all responsibility, and that this responsibility extends through the three years. Reasonable variations from this pattern would seem to be a necessary requirement to suit the needs and opportunities of different situations.

covered in two semesters, or one school year. They may be taken in one year, or may be spread over a two-year period, and carried along with supervised work and research.

The equivalent of at least a school semester should be spent on wards and in outpatient departments of teaching hospitals, reviewing medicine and certain minor specialties: dermatology, neuropsychiatry, ophthalmology, otolaryngology, chest diseases, electrocardiography, and some roentgenology. Emphasis should be placed upon diagnosis in these fields. The student should continue during this time to witness a considerable amount of orthopedic and reparative surgery. His competence should be developed at least to the point of using good judgment in the selection of operative procedures and in the evaluation of the work of others. Opportunity must be provided for student participation in the work of an industrial medical clinic located in the teaching hospital and at in-plant medical dispensaries, all of which are under the direct supervision of the faculty of the institute. The student should have every possible opportunity to study cases of occupational disease, and to develop competence in the medical aspects of compensation law administration. He should be assigned to field problems, preferably in association with a fellow graduate student in industrial hygiene engineering and under the direct supervision of the institute faculty. Early in his training, the student should be assigned to one of the institute's laboratory research groups. He should be given the responsibility for bringing a clinical viewpoint to bear upon the problem with which the group is concerned.

The total time spent by the student in the foregoing activities should take about 24 calendar months. It turns out that about one-third of this total time is spent in each of three general areas: didactic course work and literature reviews, supervised clinical work, and supervised research. Such a distribution of activity conforms in every respect to graduate training.

A third year of training is to be provided in a plant medical department affiliated with the faculty of the training institution. The student should spend about half of his time at the plant as a working member of the dispensary staff. About one-fourth of his time should be spent in conferences with selected plant supervisors for the purpose of learning plant administrative structure and practices, as well as the plant's production processes. The remaining one-fourth

Fig. 4.

The chart schematically presents the content of one school year of didactic courses and supervised work, blocked to scale in terms of time and located in a framework of three graduate years of training in industrial medicine (occupational health). The didactic courses are named in the chart. The supervised work, differently shaded, includes the presentation by the student of topics prepared from reviews of literature. In addition, the student is responsible for the satisfactory completion of field surveys at industrial plants. The work described in this chart may qualify the student for a master's degree in public health, science, industrial health, industrial medicine, or occupational health. The type of degree seems to depend more upon the location of the institute in the administrative structure of the university than upon variations in course content

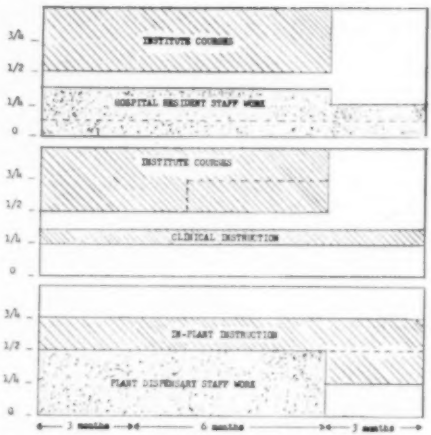

Fig. 5.

The chart schematically presents the content of two calendar (23 months) years of training, blocked to scale in terms of time and located in the framework of three graduate years of training in industrial medicine (occupational health). The chart is developed from a description of the approved residency of mixed services at the Saginaw (Michigan) General Hospital, the medical departments of certain General Motors Corporation plants, and other facilities in the community; to which are added two semesters of didactic courses at the University of Michigan School of Public Health. Two types of activity are identified by uniform shading: didactic instruction, and supervised work. No supervised research is offered in this plan; the base institute has no responsibility for work in industrial dispensaries; clinical training is provided mainly through supervised work.

of his time should be used in research work on a problem in the plant, under the supervision of a faculty member of the training institution. The fractions of time may be shifted somewhat to accommodate to the opportunities and needs of different situations. (For the various aspects of the existing programs of graduate training in industrial medicine see Figs. 1 to 5.)

The greatest possible adaptability should be provided in this plan. Certain physicians with considerable experience in industrial medicine may find it unnecessary and wasteful to take more than a few of the didactic courses, whereas others will need all that is available. Still others may find it necessary to take only the first two years of the total training program in order to develop competence in this specialty. It should be possible for the graduate student to get part of his training in one school and the rest in a second or even a third, once a reasonable degree of uniformity is established in the general curricula of these schools. A critical examination of the university catalogue descriptions of training in industrial medicine will show that the differences among some programs have to do with the fraction of the total three-year program offered rather than with fundamental disagreement as to training content. With some changes in the use of words, some rearrangements in time and scope of courses, the uniformity which would permit the desired adaptability is within the limits of reasonable hope.

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References

1. KEHOE, R. A.: Medical Education, Research and Practice in Relation to Industrial Health. *The Medical Press and Circ.*, 159: (Jan. 16) 1946.

2. ASHE, W. F.: Industrial Medical Education. *Indust. Med.*, 18:55, 1949.

3. HUSSEY, R., and MEEK, S. F.: Education and Training of the Industrial Medical Officer. *Proc. Ninth Int. Cong. on Ind. Med.* (London) 1949.

4. BROWN, E. W.: Report of a Survey of the Present Status of Graduate Education in Occupational Medicine in the United States, Canada and Great Britain. Council on Industrial Health, American Medical Association (Feb. 1) 1950.

Norisodrine Sulfate (N-Isopropylarterenol), Toxicity in Industrial Use

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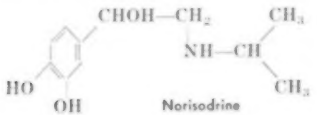
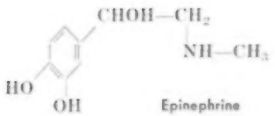
NORISODRINE sulfate is a trade-mark name for N-isopropylarterenol, which has also been called Aleudrin, Isuprel, I.P.A., Isorenin, and Isonorin. It is closely related to epinephrine, as may be seen from the structural formulas for the two drugs.



Norisodrine



Epinephrine

Norisodrine resembles epinephrine in practically all its effects on the animal body, and is a powerful sympathomimetic drug, particularly useful in the treatment of asthma. Pharmocologic studies done first in Germany and later in the United States,[1,2] indicated one significant difference between the two drugs: Norisodrine was shown to lower the blood pressure whereas epinephrine is well known as a vasopressor agent. This action apparently does not occur often when Norisodrine is given in therapeutic doses to human subjects; Gay and Long[3] found that the drug produced a slight elevation of blood pressure except in one very ill patient who had acute circulatory collapse following the injection of 0.2 milligram. Two other patients showed lesser degrees of hypotension following the injection of 0.3 and 0.5 milligram respectively.

SIDE-EFFECTS FROM NORISODRINE[3]

Side-Effect	Percentage Incidence
1. Palpitation	90
2. Nausea	19
3. Headache	17
4. Nervousness	16
5. Tremor	14
6. Dizziness	13
7. Precordial ache	9
8. Weakness	7
9. Sweating	7
10. Anginal pain	3
11. Epigastric pain	3
12. Vomiting	3
13. Tinnitus	3
14. Flushing of face	1
15. Diarrhea	1

The effect of Norisodrine sulfate varies greatly with the route of administration in human beings. A therapeutic dose by the oral route ranges between 15 and 50 milligrams. If sublingual tablets are used, the usual dose is 10 milligrams. By contrast, only one-tenth of a milligram is effective when the drug is injected subcutaneously, and as little as 0.06 milligram may produce unpleasant side-effects.[3] In the treatment of bronchial asthma, Gay and Long found that inhalation of a nebulized solution of Norisodrine gave relief with fewest side-effects. The usual dose was 15 to 20 inhalations of a 1:200 solution, which may be estimated as 2 to 3 milligrams.

Krasno, Grossman and Ivy[4,5] experimented with inhalation treatment of asthma using finely powdered Norisodrine dust diluted with lactose to a concentration of 10 or 25%. The material was administered by means of the device illustrated in Fig. 1.

Our experience with industrial exposure to Norisodrine arose through observation of pharmaceutical workers who handled the drug in bulk, compounded it with lactose, ran the powder through micronizing equipment, and filled the powder into cartridges. Realizing the toxic nature of the product, and the very small amount which might give symptoms if absorbed, we surrounded the process with all possible safeguards.

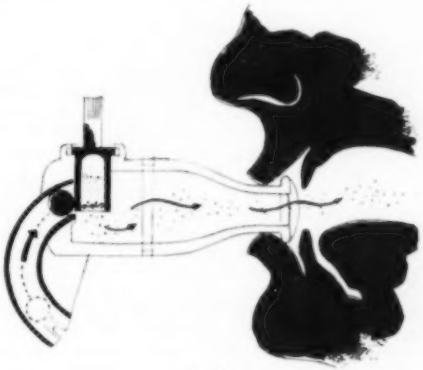


Fig. 1.
In this device, known as the "Aerohalor," inhalation by the patient causes the aluminum ball to rise in the circular track and strike the plastic cartridge. Dust sifts through fine perforations in the bottom of the cartridge, and is carried by the air stream to the patient's lungs.

A chemical method for detecting as little as 1 microgram per liter of air was developed, and is described in another section. In spite of these precautions, three workers apparently absorbed enough of the drug to cause symptoms.*

The first was a chemical operator 39 years of age, formerly employed by W.P.A. Pre-employment examination in 1940 had revealed no defects except slightly subnormal vision, and a blood pressure of 150/85. During his years of employment he had been treated for contact dermatitis several times, and had developed diabetes. In 1949, he was centrifuging about 100 pounds of Norisodrine sulfate when he noticed a feeling of tightness in the abdomen, apprehension, and tremor in his hands He was seen by a consulting physician, who noted marked tremor, dilated pupils, a blood pressure of 160/80, and pulse of 120. After resting for the remainder of the day and week end, the patient felt normal and was able to return to work. In this case, wet powder was being handled, and absorption must have been effected by the breathing of fine liquid aerosol or mist which accompanies the operation of basket centrifuges. Air samples were not obtained in this case.

The second case was a packaging operator 25 years of age, formerly employed two years as a laboratory technician. Her medical history before employment included a broken back, an appendectomy, and diabetes. Pre-placement examination revealed nothing abnormal except poor vision, adequately corrected by glasses, and four plus reaction for sugar in the urine. The pulse was 74, blood pressure 120/80. In January, 1950, she was working on an assembly line where Norisodrine cartridges were being filled. She dropped one cartridge on the table, spilling the contents. About five minutes later she noticed a feeling of anxiety, fullness in the chest, and palpitation of the heart. She was seen in the plant dispensary immediately, where she seemed calm, but showed marked tremor of both hands, a pulse rate of 100 per minute, and blood pressure of 128/80. After resting in bed for a half hour and taking lunch, she had recovered and was able to resume work.

The third case was a packaging operator 26 years of age, formerly employed two years as a file clerk. Pre-placement examination and medical history revealed nothing significant except an appendectomy and oophorectomy in 1946. The pulse was 84, and the blood pressure 110/80. In October, 1949, she was working on the cartridge filling line. A cartridge in the filling machine broke, and powder was scattered into the air. About 30 minutes later the patient noticed nausea, numbness which began in the arms and spread to the chest, and weakness. The patient went to the wash room and her nausea disappeared, but now she noted coarse clonic tremors, which she described as "like a chill." However, she was sweating and did not feel cold. The patient was hospitalized under the care of a consultant. When seen at the hospital two hours after exposure she still presented tremor of the hands and feet. Her palms were moist and warm, her pupils dilated, pulse 100, blood pressure 90/60. On the following day, all the symptoms had subsided, and the blood pressure was 110/68, the pulse 76.

We saw several other cases during the course of this operation, but are not reporting them here because they were milder, and showed no objective signs of absorption, such as rapid pulse or changes in blood pressure. In fact, this type of intoxication is unique because of the fact that identical symptoms are caused by epinephrine, a normal constituent of the body, which may be released in large amounts by anxiety. As the few genuine cases of Norisodrine absorption were discussed among the women workers, the presenting symptoms became common knowledge, and it was undoubtedly easy for the less stable members of the group literally to worry themselves into a state where symptoms of epinephrine release appeared. To prevent this from becoming a panic, it was necessary to talk to the group, to discuss frankly the transient and minor nature of the risk, and to point out the fact that repeated sampling of the air had not detected dangerous amounts of the drug at any time. Very few complaints were received after this.

Results of Air Sampling

NINE air samples were collected on three separate days at the breathing level of various positions on the cartridge filling line. They were analyzed for Norisodrine by the method described in a subsequent section None of the drug was detected in any test. Since the test was sensitive to 1 microgram of Norisodrine per liter of air, no more than 4.04 milligrams could have been absorbed by any worker during the eight-hour shift. This assumes a breathing rate of eight liters per minute, and complete retention of all material inhaled. Since it seems unlikely that this amount, evenly distributed over eight hours, could produce symptoms, we must assume that the cases reported were due to inhaling much higher concentrations of the drug, as the result of accidental breakage or spilling of the powder.

Determination of Norisodrine Sulfate in Air

NORISODRINE is the iso-propyl analogue of epinephrine. The method for the quantitative colorimetric assay of epinephrine and morphine by the iodoxybenzoate reaction by Moodey and Emerson[6] was adapted for the analysis of air-borne concentrations of Norisodrine sulfate dust. A standard Mine Safety Appliances Company midget impinger apparatus with all-glass flasks was found suitable for collecting the sam-

*The cooperation of W. R. DARNALL, M.D., in furnishing details of Cases 1 and 3 is gratefully acknowledged.

ples. Collection efficiency was determined by laboratory experiment to be 100% if the air flow did not exceed 2.83 liter per minute (0.1 cubic foot per minute).

Reagents:

1. Buffered iodoxybenzoate solution:

Sodium o-iodoxybenzoate	0.5 gm.
Sodium phosphate, dibasic	0.06 gm.
Potassium phosphate, monobasic	1.95 gm.
Distilled water, to make:	100 ml.

2. Standard Norisodrine sulfate solution:

Norisodrine sulfate	50 mg.
Distilled water to make:	1000 ml.

One ml. contains 0.05 mg. Norisodrine sulfate

Apparatus:

1. Mine Safety Appliance Company midget impinger with all-glass flasks.

2. Photoelectric colorimeter (Klett-Summerson used) with filter having maximum transmission at 500 millimicrons.

Procedure:

1. Pipette 5.0 ml. of the collected sample or a properly diluted aliquot into a 25 x 150 mm. test tube. Add 5.0 ml. of distilled water followed by 5.0 ml. of buffered iodoxybenzoate solution. Mix well and allow the tube to stand at room temperature for 30 minutes.

3. Transfer the solution into a matched colorimeter tube and determine the intensity of the color with the colorimeter. Estimate the amount of Norisodrine sulfate from a previously prepared standard curve.

To prepare the standard curve, place 1.0, 2.0, 3.0, 4.0, and 5.0 ml. of the standard Norisodrine sulfate solution in 25 x 150 mm. test tubes. Add sufficient distilled water to bring the volume to 10.0 ml. Carry out the procedure as with the samples. The standard curve follows Beer's law.

If a sample of 1 cubic foot of air is taken, the method as described may be used to determine 15 micrograms of Norisodrine sulfate per liter of air. This method may be extended downward to determine concentrations of 1 microgram per liter of air with reduced accuracy.

Summary

1. NORISODRINE sulfate is a sympathomimetic drug related to epinephrine, effective in the treatment of asthma when inhaled as an aerosol or fine powder.

2. Inhalation of a few milligrams may produce side-effects, including tachycardia, rise or fall of blood pressure, nausea, nervousness, headache, precordial pain, anxiety, sweating, and tremor.

3. Since most of these symptoms are also produced by epinephrine in states of anxiety, a fine distinction has to be made between real cases of Norisodrine intoxication and anxiety states.

4. Symptoms in three cases of Norisodrine absorption, occurring in pharmaceutical workers who filled cartridges with the 10% and 25% powder, are described. They include most of the complaints described in (2) above, are transient and non-disabling.

5. A chemical method capable of detecting one microgram of Norisodrine per liter of air is described. Application of this method to the working environment of two of the patients described showed a concentration below the sensitivity of the test. Consequently, the symptoms are attributed to sudden high concentrations caused by accidental spillage.

References

1. KONZETT, H.: Zur Pharmakologie neuer adrenalinverwandter Körper. *Arch. exper. Path. u. Pharm.*, 197:41 (December) 1940.

2. LANDS, A. M., NASH, V. L., MCCARTHY, H. M., GRANGER, H. R., and DERTINGER, B. L.: The Pharmacology of N-alkyl Homologues of Epinephrine. *J. Pharmacol. & Exp. Therap.*, 90:110 (June) 1947.

3. GAY, L. N., and LONG, J. W.: Clinical Evaluation of Isopropylepinephrine in Management of Bronchial Asthma (Report to Council). *J.A.M.A.*, 139:452 (February 12) 1949.

4. KRASNO, L. R., GROSSMAN, M., and IVY, A. C.: The Inhalation of Norisodrine Sulfate Dust. *Science*, 108:476 (October) 1948.

5. KRASNO, L. R., GROSSMAN, M. I., and IVY, A. C.: The Inhalation of 1-(3', 4'-Dihydroxyphenyl)-2-Isopropylaminoethanol (Norisodrine Sulfate Dust). *J. Allergy*, 20:111 (March) 1949.

6. MOODEY, C. R., and EMERSON, G. A.: Quantitative Colorimetric Assay of Epinephrine and Morphine by the Iodoxybenzoate Reaction. *Univ. of Cal. Pub. in Pharm.*, 1:235 1941.

Anomaly

I HAVE seen large companies, well able to afford the best of medical service, limp along with accident treatment as the only medical service available to workers. And I have seen small companies, with a necessarily limited budget, practice the very best of industrial medicine.

—From "Auditing Industry's Medical Department Facilities and Administrations," by C. RICHARD WALMER, M.D., at Industrial Hygiene Foundation's 15th Annual Meeting.

Cardiovascular Disease in Industry
— The Role of Degenerative Disease —

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HEART DISEASE is regarded as the greatest medical problem today. It ranks first in the list of causes of death. Statistics from the Metropolitan Life Insurance Company[1] show that hypertension and arteriosclerosis account for more than 90% of the cases of heart disease with known etiology at ages past 60. The marked upward trend in the recorded death rate from coronary artery disease is acknowledged, although some feel it is due in part to increased alertness of the physicians and to changing diagnostic concepts. Rheumatic heart disease, nephritis, and syphilis have responded to the more effective therapeutic measures such as the antibiotics. But the causes of hypertension and arteriosclerosis are still largely unknown, so that the attack on degenerative heart disease must be directed to the discovery of the early signs of such disease.

A study of the morbidity indices at the Consolidated Edison Company of New York, Inc., in 1949 reveals that the disability caused by cardiovascular disease results in the highest "severity rate" and is fourth in the list of causes for the "absence frequency rate." These findings are summarized in Table I.

Heart Disease in Industry

A REVIEW of the illness records discloses 1,821 cases of heart disease in 1950 among 25,000 employees of the Consolidated Edison Company of New York, Inc. The average age of our employees is 43.7 years. These data were compiled from punch card records which list the diagnostic code and duty status of each case. Table II analyzes these cases of heart disease from the point of view of etiology, absence severity, and present status as regards ability to work. The preponderance of degenerative cardiovascular disease is evident. Coronary artery disease stands out as the greatest cause of cardiovascular disease in industry. Rheumatic heart disease represents only a small percentage. Undoubtedly this reflects, among other things, careful screening at pre-employment examination.

Our case finding methods are similar to those employed in any Medical Department in industry. We are impressed that the periodic examination is the best method of discovering silent cardiovascular disease. The shortcomings of the periodic examination can be met in part by the newer clinical techniques to be described later.

An interesting feature of this summary is the relatively large percentage of employees with heart disease who are capable of doing their regular work. A significant number is utilized at limited duty where selective placement is the basis of fitting the employee with heart disease into a suitable job. The selective placement of the cardiac worker is the most important phase of the management of heart disease in industry. All patients with hypertension and heart disease are carefully studied in the Diagnostic Clinic. The employee is placed in a functional classification according to the criteria established by the American Heart Association. Periodic re-

TABLE I.

AVERAGE ANNUAL NUMBER OF CASES PER 1,000 EMPLOYEES LASTING THREE WORK DAYS OR LONGER DUE TO SICKNESS AND NON-INDUSTRIAL INJURIES, AND ANNUAL NUMBER OF WORK DAYS LOST PER EMPLOYEE, BY SEX AND CAUSE; EXPERIENCE IN CONSOLIDATED EDISON COMPANY AND NEW YORK STEAM CORPORATION, CASES ENDING DURING YEAR 1949

Cause	Annual number of cases per 1,00 employees		Annual number work days lost per employee	
	Males	Females	Males	Females
Sickness and non-industria injuries	421.7	542.3	5.238	5.869
Non-industrial injuries	25.4	26.5	.392	.540
Sickness	396.3	515.8	4.846	5.329
Respiratory diseases	174.3	258.1	1.273	1.625
Tuberculosis of respiratory system	.9	0	.079	0
Influenza, grippe	79.2	91.7	.457	.602
Colds and coryza	33.2	84.7	.169	.470
Bronchitis, acute and chronic	16.5	21.6	.150	.154
Pneumonia, all forms	6.4	.8	.119	.013
Diseases of pharynx and tonsils	23.1	36.9	.146	.206
Other respiratory diseases	15.0	22.4	.153	.180
Digestive diseases	50.4	59.8	.689	.588
Diseases of teeth and gums	1.0	2.9	.006	.029
Diseases of stomach, cancer excepted	15.4	9.6	.242	.101
Diarrhea and enteritis	26.9	35.3	.130	.223
Appendicitis	3.7	5.4	.088	.087
Hernia	3.4	.4	.160	.016
Other digestive diseases	6.0	6.2	.123	.132
Non-respiratory: non-digestive diseases	124.6	124.9	2.313	2.378
Infectious and parasitic diseases	3.6	4.1	.046	.062
Rheumatism, acute and chronic	5.5	3.7	.117	.156
Neurasthenia and the like	2.0	3.3	.069	.129
Neuralgia, neuritis, sciatica	6.1	9.1	.075	.090
Other diseases of nervous system	1.8	2.5	.098	.126
Diseases of organs of vision	4.2	7.5	.103	.131
Diseases of ears and mastoid process	2.1	5.4	.018	.027
DISEASES OF HEART AND ARTERIES	13.0	6.6	.648	.263
HIGH BLOOD PRESSURE	2.0	2.1	.035	.020
OTHER DISEASES OF CIRCULATORY SYSTEM	12.5	10.4	.207	.282
Nephritis, acute and chronic	.3	.4	.010	.093
Other diseases of genito-urinary system	7.2	15.4	.147	.211
Diseases of the skin	17.0	10.8	.137	.077
Diseases of organs of movement except				
Diseases of joints	32.1	24.1	.270	.240
All other diseases	15.2	19.5	.333	.561
Ill-defined and unknown causes	47.0	73.0	.571	.733
Average number of employees	22,687	2,410	22,687	2,410

TABLE II.
ANALYSIS OF 1821 CASES OF HEART DISEASE
Consolidated Edison Company of New York, Inc., 1950

	Total	Coronary Artery Disease	Arteriosclerotic* Heart Disease	Essential Hypertension	Hypertensive Heart Disease and Arteriosclerosis	Rheumatic Heart Disease	Miscellaneous**
Number of Cases	1821	610 (33.6%)	194 (10.7%)	293 (16%)	488 (26.8%)	201 (11%)	35 (1.9%)
Employees with Absence	618	233	43	97	163	76	6
Average No. of Days Lost per Absence	27.5	31.4	29.5	7.8	20.2	28.6	47.6
Working—Full Duty	1066	353	114	116	323	137	23
Working—Limited Duty	408	199	34	37	94	38	6
Separated	7	3				2	2
Retired—Age	52	9	21	5	15	2	
Retired—Disability	56	16	9	5	22	3	1
Died	41	16	3	1	9	9	3

The disposition of those employees who left the Company for other reasons is not included in any of the tables.
*Without evident coronary thrombosis or angina pectoris.
**Syphilitic heart disease and arteriosclerosis of aortic arch without hypertension.

check of the physical status is necessary in any selective placement program. In a general way, all those over Class II are suitable only for clerical work. Each case is treated individually, and a real effort is made to fit the worker into a suitable job dependent upon his own physical status. The detrimental physical effects of the psychological maladjustment to a new job are recognized, and it is interesting that so many of the employees with heart disease are able to continue at their regular jobs. The cardiac reserve of the employee who has suffered a coronary thrombosis and apparently recovered, is hard to estimate. The danger of recurrence and the possibility of unheralded catastrophe are always to be considered. The operating division of the utility industry must be considered in the category of a "heavy industry." In addition there is the likelihood of emergency work under conditions of stress and overtime with particular responsibility for the safety of others. The employee in the operating departments must have some general physical restrictions to safeguard him under such circumstances.

Coronary Artery Disease

TABLE III summarizes the 610 cases of coronary artery disease. Two hundred and ninety cases were noted to have suffered coronary thrombosis. There were 120 cases with absence in this group averaging 42.7 days of time lost. This included 82 persons with acute coronary thrombosis who were off duty an average of 11 weeks. The other cases represented myocardial damage subsequent to previous thrombosis. All employees who have had coronary thrombosis and recovered are considered to be in Class II, and as such can no longer do heavy manual work. About one-third of the cases had to be placed on physical restrictions and could not carry out the full duties of their job titles. Over 90% of the employees with coronary thrombosis returned to useful work. There were only 14 deaths in this group.

The remaining cases of coronary artery disease manifested angina pectoris and myocardial damage on the electrocardiogram. The incidence of associated hypertension cannot be accurately estimated from the summarized records, but from clinical experience we recognize that it is a sizable percentage.

TABLE III.
CORONARY ARTERY DISEASE

	Coronary Thrombosis	Angina Pectoris, Coronary Sclerosis
No. of Cases	290 (5F)	329 (15F)
No. of Patients with Absences	120	113
Average No. of Days Lost Per Absence	42.7	29.2
Working—Full Duty	166	187
Working—Limited Duty	99	109
Separated—Disability	1	2
Retired—Age	2	7
—Disability	12	4
Deceased	14	2

Length of Service	Age in Years (Active Employees) 20—29	30—39	40—49	50—59	60—65
Under 1 Year					
1—3 Years		1	2	1	
4—9 "		1	2		
10—15 "			4	4	
16—19 "		6	15	16	7
20—24 "		7	111	82	19
25—29 "			39	100	25
30—40 "			11	5	41
41 and over				1	7

TABLE IV.
ARTERIOSCLEROTIC HEART DISEASE WITHOUT CORONARY THROMBOSIS*

	"Chronic Myocarditis, Compensated"	"Chronic Myocarditis, Decompensated"
No. of Cases	168 (11F)	26 (1F)
No. of Patients with Absences	33	10
Average No. of Days Lost per Absence	6.9	52.2
Working—Full Duty	98	16
Working—Limited Duty	32	2
Separated—Disability		
Retired—Age	20	1
—Disability	7	2
Deceased	1	2

*No evident history of coronary thrombosis or angina pectoris. Non-specific electrocardiogram changes.

Length of Service	Age in Years (Active Employees) 20—29	30—39	40—49	50—59	60—65
Under 1 Year					
1—3 Years					
4—9 "					
10—15 "			1		3
16—19 "			4	8	10
20—24 "			26	23	9
25—29 "			10	35	10
30—40 "			1	12	7
41 and over				1	1

There were 194 cases of arteriosclerotic heart disease without coronary artery disease (Table IV) as evidenced by a lack of history of angina pectoris and the presence of non-specific changes in the electrocardiogram. Hypertension is absent and there is no evidence of valvular heart disease. These cases have a "chronic myocarditis" which in many instances would show coronary artery disease on post-mortem examination.

An analysis of each subgroup shows the greatest incidence of cases in the fourth and fifth decades, and the great preponderance occurs in workers with over 20 years' service. Clearly, this illness affects the workers in their most productive years when their skill is of the greatest use to industry.

Medical experience has shown that unusual effort is rarely related to coronary thrombosis. In the past year, one case suffered a recurrence of coronary thrombosis, while on limited duty, when lifting a weight of approximately 40 pounds. In another case, a crushing injury to the anterior chest wall was followed by the development of auricular fibrillation and a non-specific pattern of myocardial damage on the electrocardiogram.

Hypertensive Vascular Disease

HYPERTENSIVE vascular disease represents essential hypertension and its complications of arteriosclerosis and heart disease. There were 293 cases of essential hypertension (Table V). These are characterized by an elevation of blood pressure but cardiovascular disease is absent. The electrocardiogram is normal, and the optic fundi show only mild sclerotic changes. Renal function is normal. The prognosis in this group is good. There was one death only, and this was due to a cerebral hemorrhage. The absence frequency rate is low, and the severity rate is the lowest in the group with heart disease. The great majority are working at full duty. The major risk in essential hypertension is asymptomatic coronary insufficiency with normal cardiac findings and a normal electrocardiogram. The other complication may be cerebral thrombosis or hemorrhage. The indications for physical restrictions are usually a diastolic pressure above 120 and evidence of coronary insufficiency as manifested by abnormal exercise electrocardiogram tests. Occasionally a "malignant phase" can develop in essential hypertension and rapidly follow a fatal course. Marked papilledema and hemorrhagic retinopathy are characteristic findings. Cardiac, renal, and cerebral abnormalities soon complicate the clinical picture.

The arteriosclerotic complications of hypertension can produce only a few symptoms if the process involves mainly the large arteries, such as the aortic arch. When the coronary arteries and optic fundi are involved, the hypertension is more apt to be associated with systemic symptoms and the prognosis is more grave. With evident cardiac enlargement and myocardial failure, there is recognized the clinical picture of hypertensive heart disease. A comparison of Tables V, VI, and VII will show the increased absence severity rate with the more advanced complications of hypertensive vascular disease. These are more disabling as manifested by the greater percentage working at limited duty, and the increased number of retirements for disability. As is characteristic with degenerative disease, the greatest incidence of

TABLE V.
ESSENTIAL HYPERTENSION

No. of Cases	293 (19F)
No. of Patients with Absences	97
Average No. of Days Lost per Absence	7.8
Working—Full Duty	116
Working—Limited Duty	37
Separated—Disability	
Retired—Age	5
—Disability	5
Deceased	1

Length of Service	Age in Years (Active Employees)				
	20—29	30—39	40—49	50—59	60—65
Under 1 Year					
1—3 Years	3	2	2	1	
4—9 "		1			
10—15 "		2	3	1	
16—19 "		1	1	5	3
20—24 "		8	52	37	6
25—29 "			38	52	16
30—40 "			1	21	19
41 and over					7

TABLE VI.
HYPERTENSION WITH ARTERIOSCLEROSIS

No. of Cases	336 (24F)
No. of Patients with Absences	105
Average No. of Days Lost per Absence	12.4
Working—Full Duty	232
Working—Limited Duty	53
Separated—Disability	
Retired—Age	11
—Disability	17
Deceased	5

Length of Service	Age in Years (Active Employees)				
	20—29	30—39	40—49	50—59	60—65
Under 1 Year	1				
1—3 Years	1	1			1
4—9 "	1	1		1	
10—15 "					
16—19 "		1	2	4	1
20—24 "		2	25	42	35
25—29 "			30	52	15
30—40 "			4	34	42
41 and over				2	6

TABLE VII.
HYPERTENSIVE HEART DISEASE

No. of Cases	152 (6F)
No. of Patients with Absences	58
Average No. of Days Lost per Absence	28
Working—Full Duty	91
Working—Limited Duty	41
Separated—Disability	
Retired—Age	4
—Disability	5
Deceased	4

Length of Service	Age in Years (Active Employees)				
	20—29	30—39	40—49	50—59	60—65
Under 1 Year					
1—3 Years		1			
4—9 "	1	2			
10—15 "					
16—19 "		2	5	1	1
20—24 "			13	12	22
25—29 "			12	32	12
30—40 "			1	12	8
41 and over					2

TABLE VIII.
RHEUMATIC HEART DISEASE

	Compensated	Decompensated
No. of Cases	139 (9F)	62 (6F)
No. of Patients with Absences	48	28
Average No. of Days Lost per Absence	18.4	38.9
Working—Full Duty	98	39
Working—Limited Duty	31	7
Separated—Disability	2	
Retired—Age		2
—Disability	2	1
Deceased	3	6

Length of Service	Age in Years (Active Employees) 20—29	30—39	40—49	50—59	60—65
Under 1 Year	4				
1—3 Years	10	3			
4—9 "	1	5			
10—15 "		2	3	1	1
16—19 "		2	11	4	5
20—24 "		2	39	21	5
25—29 "			19	22	6
30—40 "			1	9	9
41 and over					

cases is in the fourth and fifth decade, and in those workers with over 20 years' service.

Rheumatic Heart Disease

RHEUMATIC heart disease comprised approximately 10% of the total number of cases reviewed (Table VIII). The great majority of cases were in a compensated state. There were 62 cases with cardiac decompensation, and there were six deaths from heart failure in this group. In contrast to degenerative cardiovascular disease, the greatest percentage of cases occurred in the fourth decade. Nearly 70% were capable of doing their regular work, and only five were retired for disability in some form. The major problem with rheumatic heart disease in the past has been the high disability rate in the fourth decade. The use of antibiotics to prevent recurrent or complicating infection, and proper medical supervision, have contributed to the better prognosis.

Two cases were complicated by subacute bacterial endocarditis. One died from a mesenteric embolus, and the other recovered, but the development of myocardial failure made him unfit for any useful work.

Miscellaneous Heart Disease

TABLE IX summarizes the 35 cases in this group. The poor prognosis in syphilitic heart disease is noted. There are eight cases of aneurysm, and it is interesting to note that one case has continued to work at limited duty with a saccular type of aneurysm, the size of a baseball at the distal portion of the transverse arch of the aorta, which has been unchanged for nearly 15 years.

The cases of arteriosclerotic aortitis are without hypertension, and present a systolic murmur over the aortic valve area with an increase in the intensity of the second aortic sound. There is usually fluoroscopic and x-ray evidence of enlargement of the aortic arch. The majority

TABLE IX.
MISCELLANEOUS

	Syphilitic Heart Disease	Syphilitic Aneurysm	Aortitis Arteriosclerotic
No. of Cases	14	8	13
No. of Patients with Absences	5		1
Average No. of Days per Absence	47.4		1
Working—Full Duty	9	5	9
Working—Limited	1	3	2
Separated			2
Retired—Age			
—Disability	1		
Deceased	3		

of the cases present no disability. Some with associated coronary artery disease require limitation of physical activity.

Early Diagnosis

THE diagnosis of degenerative cardiovascular disease associated with hypertension and coronary artery disease, such as thrombosis and angina, is quite easily established. The prognostic significance of obesity, with transient hypertension and transient tachycardia, in the later development of sustained hypertension and degenerative cardiovascular disease is well recognized.[2] A mass chest x-ray survey was reported by Smyth[3] to have uncovered 181 cases of significant cardiovascular disease among nearly 15,000 employees x-rayed at the Bethlehem Steel Company. The limitations of this method are evident in the fact that heart disease may be present without producing changes in the size and contour of the heart and aorta, especially on miniature films. The difficulty in diagnosing clinically significant coronary artery disease is accentuated by the fact that physical examination, x-ray of the heart, and the electrocardiogram may be entirely normal in such cases.

Certain clinical tools have been devised to assist in the earlier diagnosis of silent coronary artery disease. Interest has been revived in the slit roentgen kymograph for studying the function of the heart muscle. A practical approach is realized in the selective study of the activity of the left border of the heart. The ventricular electrokymograph, on the other hand, is an instrument more suited to research purposes. Our experience has shown the Krasno-Ivy flicker-photometer to be unsatisfactory for general use in the clinic. There is a wide variability in the baseline and in the detection of the flicker endpoint, depending on the operator. We have successfully utilized the "two-step" exercise electrocardiogram test and the balistocardiogram in the detection of silent cardiovascular disease.

1. "TWO-STEP" EXERCISE TEST: Various tests have been devised to evaluate functional insufficiency of the coronary circulation.[4,5] Some are not adapted to industrial medical practice. Master[6] has developed a standard "two-step" exercise test for determining coronary insufficiency. It consists of ascending and descending two nine-inch steps a calculated number of times,

depending upon age and weight, in one and one-half minutes. The electrocardiogram, at intervals of one, four and 10 minutes after exercise, is compared with a control tracing. If the single "two-step" test gives a normal response, a double "two-step" test is then accomplished, the subject making twice the usual number of trips in three minutes. In his most recent report, Master believes that there is sufficient evidence practically to exclude coronary insufficiency, organic or functional, if the double "two-step" test is negative. It is to be noted that a positive exercise test may occur in such conditions as neurocirculatory asthenia or severe anxiety neurosis. Unterman and DeGraff[7] feel that the double standard test only slightly increases the number of positive results, and state that the standard exercise test can give a normal response in nearly 50% of the cases of coronary artery disease.

In the interpretation of the electrocardiogram, the P-R interval is taken as the control level. Opinion differs as to the amount of depression of the S-T segment which is significant of abnormal response. We have adopted the following criteria for a positive exercise test:

1. A depression of the R-S-T junction of at least one mm. in leads I, II, and III, or 0.75 mm. in V-4, even if it is present in the one minute tracing only. Depressions lasting beyond one minute, or deeper than 1 mm., are of even more definite significance.

2. Conversion of an upright T to an isoelectric or inverted T in leads I, II, or V-4. The reverse process as well as the conversion of the diphasic T to an upright T is also considered significant in these leads.

3. Appearance of extrasystoles or runs of coupled beats.

2. BALLISTOCARDIOGRAM: The ballistocardiograph records the movements of the body imparted by the movements of the blood within. The means of recording these movements have been described by Starr,[8] Nickerson,[9] and Brown.[10] These instruments are essentially bulky and fixed. Dock[11] has developed a portable electromagnetic ballistocardiograph which utilizes the standard electrocardiographic instruments and allows records to be easily made in an office. The waves recorded by the Dock Ballistocardiograph approximate those of Starr. Simultaneous electrocardiograms are important in readily identifying the waves of the ballistocardiogram, but good clinical results can be achieved by the ballistocardiogram alone.

The deflections of the ballistocardiogram are said to be mathematically related to the cardiac ejection curve. In the normal record[12] there are three principal waves, H, I, and J which occur during systole. In diastole, the waves are more variable, the L and N waves usually being present, and never approaching the amplitude of the J wave. The H wave begins during the first heart sound and just after the apex thrust. The

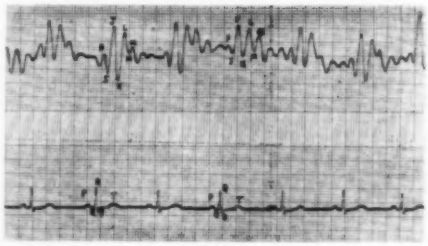

Fig. 1.

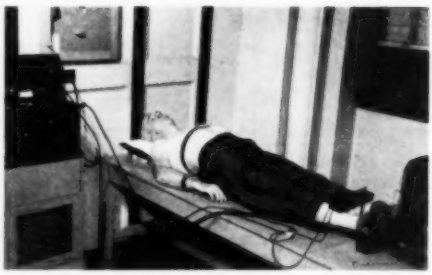

Fig. 2.

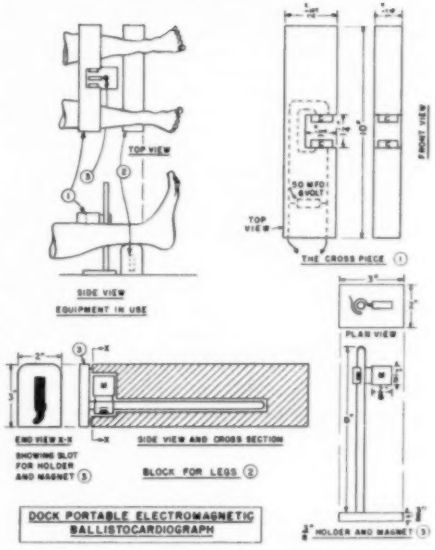

Fig. 3.

C—Electrical generating coil (8000 turns No. 40 wire)
M—Alnico flat magnet

I wave has been attributed by some to the footward recoil following the headward ejection of blood. The J wave is the highest normal upward deflection and is produced when the column

of blood in the ascending aorta and pulmonary artery is first decelerated. The K wave represents deceleration of the column of blood in the descending aorta against the peripheral arterial resistance in the legs. The relation of the component waves of the ballistocardiogram and electrocardiogram is illustrated in Fig. 1. The technique of the Dock portable electromagnetic ballistocardiograph can be visualized in Fig. 2 and the construction of the instrument is shown in Fig. 3.

The evidence to date[13] indicates that a ballistocardiogram abnormal in form is significant of myocardial abnormality. These abnormalities occur with greatest frequency in patients over 50 years of age. The experience of Starr suggests that these abnormalities are serious. But the ballistocardiogram can be normal in the presence of organic heart disease. Though abnormality of the ballistocardiogram is not diagnostic of structural abnormality, there is increasing evidence which seems to establish some relationship between abnormality of ballistic form and coronary artery disease. It will take some years of experience with the portable electromagnetic ballistocardiograph in the hands of practicing physicians before more definite conclusions can be reached. Brown's classification[14] of abnormal ballistocardiograms into four grades has proved practicable in our work. This classification is based on the amplitude of the complexes in inspiration and expiration and on definitiveness in form. The portable electromagnetic ballistocardiograph is not so consistent as the fixed machines, and some of the tracings classified in Grade 1 may represent a deviation from the presently accepted normal standards and not necessarily indicate abnormal cardiac function. Representative tracings by the portable electromagnetic ballistocardiograph, classified by Brown's method, are illustrated in Fig. 4.

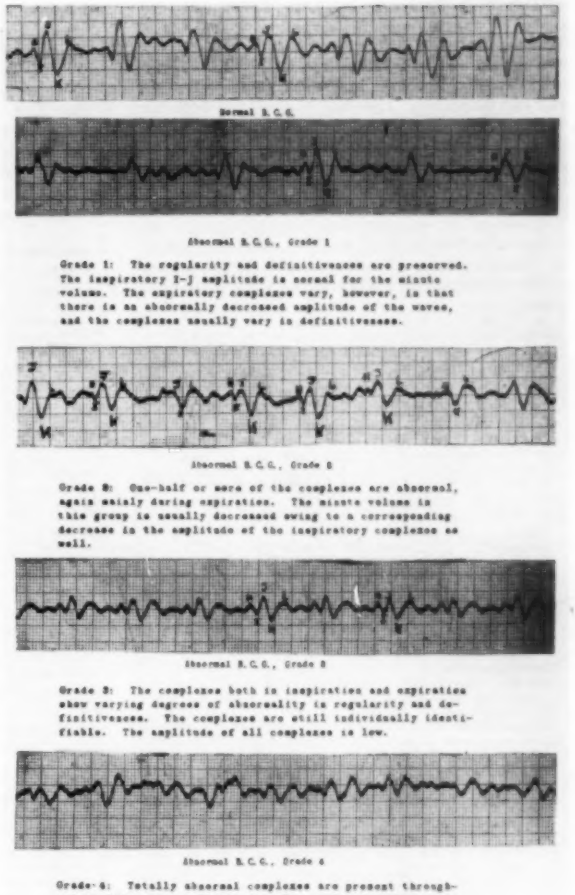
Normal B.C.G.
Abnormal B.C.G., Grade 1
Grade 1: The regularity and definitiveness are preserved. The inspiratory I-J amplitude is normal for the minute volume. The expiratory complexes vary, however, in that there is an abnormally decreased amplitude of the waves, and the complexes usually vary in definitiveness.
Abnormal B.C.G., Grade 2
Grade 2: One-half or more of the complexes are abnormal, again mainly during expiration. The minute volume in this group is usually decreased owing to a corresponding decrease in the amplitude of the inspiratory complexes as well.
Abnormal B.C.G., Grade 3
Grade 3: The complexes both in inspiration and expiration show varying degrees of abnormality in regularity and definitiveness. The complexes are still individually identifiable. The amplitude of all complexes is low.
Abnormal B.C.G., Grade 4
Grade 4: Totally abnormal complexes are present throughout in this group. They are of low amplitude and are unidentifiable.

Fig. 4.
Ballistocardiograph classification by Brown's method.

3. Method of Investigation

UTILIZING these two clinical tools since January, 1950, we have been conducting studies in the early detection of silent cardiovascular degenerative disease. The ballistocardiogram is used as a screening device to select people with absent cardiovascular findings or who present only the precursors of cardiovascular disease, such as obesity and transient hypertension, on whom more detailed study with the "two-step" exercise test should be accomplished. The ballistocardiogram is taken as part of the routine electrocardiogram without adding more than two minutes to the procedure. The standard "two-step" exercise test takes 15 to 20 minutes, and the double exercise test requires about 35 minutes. Part of this investigation can be seen in the result of a study in a selected group of 370 individuals, mainly over 40 years of age, who underwent periodic health examination in 1950,

as shown in Tables X and XI. There were 26 cases of asymptomatic coronary insufficiency (Tables XII and XIII), in which the combined use of the ballistocardiogram and the exercise electrocardiogram was instrumental in establishing the diagnosis. The double standard exercise test nearly doubled the percentage of positive responses. This type of individual should be given definite health counselling in an attempt to correct errors of diet and habit which apparently are related to degenerative disease. Correction of obesity and overindulgence in tobacco, coffee, and alcohol is outlined. Relief of tension states is accomplished by a review of the particular life situation in each individual case.

TABLE X.
370 CASES OF PERIODIC EXAMINATION

Ballistocardiographic Findings

Normal	229	
*Grade 1	22	(3 cases in this group abnormal)
Abnormal	119	(33%)
(Grades 2-3-4)	—	
Total	370	

*Many in this group are normal deviation from the accepted pattern.

Exercise Electrocardiogram Tests

Normal	42	
Abnormal	26	(Standard Exercise Test — 14
	—	(Double Standard Test — 12
Total	68	

Abnormal Ballistocardiogram without Objective Evidence of Cardiac Disease

Total Number of Cases	59
Exercise EKG Test	39 cases
Normal Response—28 cases	
Standard Test	4
Double Test	24
Abnormal Response—11 cases	
Standard Test	4
Double Test	7

Conclusion

DEGENERATIVE cardiovascular disease is the greatest cause of disability in the working man, affecting him at that time in life when his talents and experience should be most useful to him and to industry. The approach to the problem of the control of degenerative disease lies in the periodic health examination. Experience with this type of examination in the past demonstrates that it has uncovered organic dis-

TABLE XI.
ABNORMAL BALLISTOCARDIOGRAMS—122 CASES
(GRADE 1—3 CASES; GRADE 2-3-4—119 CASES)

1. *No Evident Cardiac Abnormality*—48 cases
   - Grade 2— 6 Cases
   - Grade 3—16 Cases
   - Grade 4— 6 Cases
2. *Hypertension*—20 Cases
   - Grade 2— 7 Cases
   - Grade 3— 6 Cases
   - Grade 4— 7 Cases
3. *Non-Specific Myocardial Damage on EKG*—6 Cases
   - Grade 2— 2 Cases
   - Grade 3— 2 Cases
   - Grade 4— 2 Cases
4. *Arteriosclerosis of Aortic Arch without Hypertension*—9 Cases
   - Grade 2— 3 Cases
   - Grade 3— 5 Cases
   - Grade 4— 1 Case
5. *Coronary Thrombosis*—6 Cases
   - Grade 2— 4 Cases
   - Grade 3— 2 Cases
6. *Angina Pectoris (Normal EKG)*—5 Cases
   - Grade 2— 1 Case
   - Grade 3— 1 Case
   - Grade 4— 2 Cases
   - (Grade 1— 1 Case)
7. *Rheumatic Heart Disease*—2 Cases
   - Grade 2— 1 Case
   - Grade 3— 1 Case
8. *Asymptomatic Coronary Insufficiency*—26 Cases (11 cases without evident cardiac abnormality)
   - Grade 2—17 Cases
   - Grade 3— 7 Cases
   - (Grade 1— 2 Cases)

TABLE XII.
GROUP I: CASES OF ASYMPTOMATIC CORONARY INSUFFICIENCY WITH NON-SPECIFIC EKG CHANGES

Case No.	Patient	Age	Sex	Clinical Diagnosis	Physical Findings: Wgt	BP	Cardiac Enlargement	Aortic Murmur	Mitral Murmur	Fluoroscopy: Cardiac Enlargement	Abnormal Aorta	EKG: Control	Standard Exercise	Double Standard Exercise	BCG Grade
1	J B	55	M	Asymptomatic myocardial damage	N	N	0	0	0	0	0	+	+		2
2	A R	48	M	Asymptomatic myocardial	N	N	0	0	0	0	0	+	+	+	2
3	G S	55	M	Right B B B (EKG), asymptomatic	N	N	0	0	0	0	0	+	+		2

GROUP II: CASES OF ASYMPTOMATIC CORONARY INSUFFICIENCY WITH OBJECTIVE EVIDENCE OF CARDIAC ABNORMALITY

1	W A	49	M	Aortitis, arteriosclerotic, Myocardial Damage (EKG), non-specific	3+	+	0	+	0	0	0	+	+		2
2	O C	52	M	Aortitis, arteriosclerotic, Transient Hypertension	2+	N	0	+	0	0	0	N	+	+	3*
3	F G	63	M	Aortitis, arteriosclerotic	2+	N	0	+	0	0	+	N	+	+	3
4	I H	56	M	Aortitis, arteriosclerotic	N	N	0	+	0	0	0	N	+		2
5	C W	57	M	Aortitis, arteriosclerotic	N	N	0	+	0	0	?	N	N	+	2
6	F M	60	M	Arteriosclerosis Obliterans	N	N	0	0	0	0	0	N	+	+	2
7	F J	49	M	Questionable Coronary Thrombosis—1943	+	N	0	+	0	0	0	?	N	+	N&I
8	W L	51	M	Essential Hypertension Questionable Angina	N	+	0	0	0	0	0	N	+	+	2**
9	L M	52	M	Essential Hypertension	+	+	0	0	0	0	0	N	N	+	2
10	F J	49	M	Hypertension with arteriosclerosis of aortic arch	N	+	0	2+	0	0	0	N	N	+	2
11	L S	53	M	Hypertension with arteriosclerosis of aortic arch	+	+	0	3+	0	0	+	N	+		3
12	C T	47	M	Hypertension with arteriosclerosis of aortic arch	N	+	0	+	0	0	+	N	N	+	3

*Developed coronary thrombosis in two months. **EKG changes in six months.

TABLE XIII.
GROUP III: CASES OF ASYMPTOMATIC CORONARY INSUFFICIENCY WITHOUT OBJECTIVE EVIDENCE OF CARDIAC ABNORMALITY

Case No.	Patient	Age	Sex	Clinical Diagnosis	Physical Findings: Wgt	BP	Cardiac Enlargement	Aortic Murmur	Mitral Murmur	Fluoroscopy: Cardiac Enlargement	Abnormal Aorta	EKG: Control	Standard Exercise	Double Standard Exercise	BCG Grade
1	G E	45	M	Moderate Obesity Quiescent Gall Bladder	2+	N	0	0	0	0	0	N	N	+	3
2	M E	51	M	Moderate Obesity	2+	N	0	0	0	0	0	N	?	+	2
3	W F	52	M	Moderate Obesity	2+	N	0	0	0	0	0	N	N	+	2
4	A H	54	M	Conversion Hysteria (Headache)	N	N	0	0	0	0	0	N	+		2
5	C H	43	M	Anxiety Neurosis	N	N	0	0	0	0	0	N	+	+	3
6	C M	48	M	Normal Phys. Examination	N	N	0	0	0	0	0	N	N	+	3&1
7	R O	56	M	Moderate Obesity Transient Hypertension	2+	N	0	0	0	0	0	N	+	+	2
8	R W	50	M	Moderate Obesity Transient Hypertension	+	N	0	0	0	0	0	N	N	+	2
9	W S	53	M	Mild Obesity	+	N	0	0	0	0	0	N	N	+	3
10	W S	59	M	Moderate Obesity	2+	N	0	0	0	0	0	N	+	+	2
11	E S	53	M	Severe Obesity	3+	N	0	0	0	0	0	N	N	+	2

ease in at least 20% of those over 40 years of age. Utilizing the newer techniques, this percentage can be increased, especially in this selected group. The practicability of extending this type of examination to all employees has encountered the obstacle of the time and cost factor without evidence of tangible return. A type of multiphasic screening technique, consisting of urine examination, serodiagnostic test, electrocardiogram, and utilizing the portable electromagnetic ballistocardiogram, can be used to select those cases on whom more detailed cardiovascular study is necessary. A chest x-ray or photofluorogram would increase the scope of this type of examination in checking for the presence of lung diseases. With an aging population, and the evident necessity of utilizing the older worker, measures to maintain the health of the working man by the prevention of disabling disease must become one of the techniques of industrial medicine.

References

1. Statistical Bulletin, Metropolitan Life Insurance Company, 31:7 (Jan.) 1950.

2. LEVY, R. L., WHITE, P. D., STROUD, W. D., and HILLMAN, C. C.: Overweight. Its Prognostic Significance in Relation to Hypertension and Cardiovascular—Renal Disease. *J.A.M.A.*, 131:951 (July 20) 1946.

3. SMYTH, L. T.: Cardiovascular Disease in the Steel Industry. *Indust. Med. & Surg.*, 20:34 (Jan.) 1951.

4. LEVY, R. L., WILLIAMS, N. E., BRUEN, H. G., and CARR, H. A.: The Anoxemia Test in the Diagnosis of Coronary Insufficiency. *Am. Heart J.*, 21:634 (May) 1951.

5. STEIN, I., and WEINSTEIN, J.: Further Studies of the Effect of Ergonovine on the Coronary Circulation. *J. Lab. and Clin. Med.*, 36:66 (July) 1950.

6. MASTER, A. M.: The Two-Step Exercise Electrocardiogram: A Test for Coronary Insufficiency. *Ann. Int. Med.*, 32: 842 (May) 1950.

7. UNTERMAN, D., and DE GRAFF, A. C.: The Effect of Exercise on the Electrocardiogram (Master "Two-Step" Test) in the Diagnosis of Coronary Insufficiency. *Am. J. Med. Sci.*, 215:671 (June) 1948.

8. STARR, I.: The Ballistocardiograph—An Instrument for Clinical Research and for Routine Clinical Diagnosis. The Harvey Lectures, 1946-47, pp. 194-219.

9. NICKERSON, J. L., and CURTIS, H. J.: The Design of the Ballistocardiograph. *Am. J. Physiol.*, 142:1 (Aug.) 1944.

10. BROWN, H. R., JR., and PEARSON, R.: New Electronic Method for Simultaneous Recording of Ballistocardiograph and Electrocardiograph. *Am. Heart J.*, 35:756 (May) 1948.

11. (a) DOCK, W., and TAUBMAN, F.: Some Technics for Recording the Ballistocardiogram Directly from the Body. *Am. J. Med.*, 7:751 (Dec.) 1949.

(b) DOCK, W.: The Electromagnetic Ballistocardiograph, personal communication.

12. BROWN, H. R., JR., and DE LALLA, V., JR.: Ballistocardiogram, Description and Clinical Use. *Am. J. Med.*, 9: 718 (Nov.) 1950.

13. STARR, I., and MAYOCK, R. L.: On the Significance of Abnormal Forms of the Ballistocardiogram. A Study of 234 Cases with 40 Necropsies. *Am. J. Med. Sci.*, 25:631, (June) 1948.

14. BROWN, H. R., JR., HOFFMAN, M. J., and DE LALLA, JR.: Ballistocardiographic Findings in Patients with Symptoms of Angina Pectoris. *Circulation*, 1:132 (Jan.) 1950.

His Battle . . . .

WE BELIEVE that all our basic freedoms are in graver jeopardy today because of apathy with many people in not fighting back vigorously when Marxian socialism attacks any sector of the line where they are not immediately affected. Mr. Average Citizen's erroneous conclusion is that "socialized medicine is the doctors' battle." He will not feel that way when his tax for political medicine is much more than he ever expended under our present system where he is directly financially responsible for the medical care for his family. He will learn too late that it was *his battle* when endless lines of people, seeking "something for nothing," deny him adequate medical attention. Then he will feel obliged to seek private medical care, at extra cost, while continuing to be bled in oppressive taxation for unsatisfactory political medicine.

—The American Council of Christian Churches

Impressions of Industrial Medicine and Social Legislation in England, France, and Holland

Part I—England

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THE TERM "impressions" in the title of this article has been chosen deliberately since it is obvious that one could hardly expect to gain deep insight into several European countries in the brief period of eight weeks. The trip which serves as a basis for these remarks was made possible by a fellowship from the World Health Organization, which grants about a dozen such fellowships annually to Americans who are interested in various phases of public health. Air travel made it possible to utilize the available time to the greatest advantage. That there is a close relationship between industrial medicine and social insurance will become apparent as various programs are described.

England

THE specific reason for visiting England was to observe what effects, if any, the National Health Service is having on the practice of industrial medicine. Although it can be said that up to the present time there has been no radical or far-reaching effect, it was apparent that the entire social insurance program is exerting considerable influence on industrial medicine as well as on all other branches of medicine and on many other phases of life. This influence cannot be understood or properly interpreted without a thorough knowledge of the present economic and political situation in Britain. A country which has been through two major wars, which has lost a substantial part of its manpower, which has suffered widespread destruction of its industrial potential through enemy bombing, and has lost much of its influence in a far-flung colonial empire should not be expected to attempt to solve its social problems in the same manner as countries which have not suffered these misfortunes. Less resolute nations, under similar adversity, would probably have gone to pieces altogether. The British have not gone to pieces by any means. Although the social insurance program in Britain did not become fully operative until after World War II, much of it was planned several years earlier.

Of three weeks in England, about half of the time was spent in London, and the remainder in brief visits to such industrial centers as Birmingham, Manchester, Nottingham and Cardiff (Wales). Travel was greatly facilitated through the efficient and thoughtful offices of the British Council. This is a government-sponsored agency, a sort of super-travel bureau, set up to assist scientists and scholars from abroad in arranging their programs of study. The Council representatives think of every detail that might contribute to rendering a sojourn in Britain a pleasant one, and spare no effort in making every conceivable type of arrangement for visiting observers and students. If given an idea of the sphere of interest of a visitor, they show uncanny ability to select the most important people, programs, and places to be seen.

While, as has been mentioned, the National Health Service has not yet had any significant effect on industrial medicine, the situation in this respect may change at any moment. More than a year ago the Privy Council appointed the so-called Dale Committee to study the status of industrial medicine and to make recommendations as to future relationships between industrial medicine and the National Health Service. The Dale Committee originally promised to submit its report in April or May, 1950. This was repeatedly postponed but the report was finally released in February, 1951. In essence, it recommended no significant change in the existing status of industrial medicine. The postponement, however, discouraged planning or development of industrial health programs. Naturally no one wished to start something new only to be obliged to change plans if the new activities should not happen to be in consonance with the recommendations of the Dale Committee.

Teaching

A POSSIBLE indirect effect of the National Health Service on industrial medicine was found at the London School of Hygiene and Tropical Medicine, where instruction is offered leading to qualification for a Diploma in Industrial Health. During the past few years the number of students in the Industrial Health curriculum has shown a marked increase over previous years. Faculty members offered three possible explanations: (1) extremely low salaries paid to public health officers for service in Local Health Authorities; (2) desire to enter a field of practice not embraced by the National Health Service; or (3) great difficulty of obtaining an appointment as a specialist in the other branches.

The Diploma in Industrial Health is granted by the Royal College of Physicians, the Royal College of Surgeons, and several faculties in

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Scotland. Courses of study leading to a Diploma in Industrial Health are open to medical graduates, but not until two years after graduation. The two years presumably would have been spent in an internship or in practice. The first part of the industrial health curriculum, embracing at least 10 weeks of full-time instruction or a minimum of 300 clock hours of part-time instruction, covers the same basic material that is given to health officers. The second part, 350 hours, covers the more specific material of industrial medicine, such as structure of industry, labor unions, legislation, functions of the industrial medical officer, occupational diseases, safety, and many other subjects. The final part of the training calls for a minimum of 200 hours divided between several clinical specialties and a period of attendance in an approved plant medical department. Schools offering training courses leading to the Diploma in Industrial Health include the London School of Hygiene and Tropical Medicine, the University of Durham, and the University of Manchester, the latter through the Nuffield Department of Occupational Health which also offers training for industrial nurses. This department is under the able direction of Professor Ronald E. Lane who is familiar to many American industrial physicians through his writings and as a result of his visit to the United States several years ago.

In-Plant Medicine

AVAILABLE time permitted visits to only a limited number of industrial medical departments. The impression gained was that there is considerable similarity between the situations in Britain and in the United States, with well-developed programs in many of the larger plants and relatively little in the smaller. (The Slough small plant program will be discussed later.)

The Austin Motor Company, in Birmingham, may be cited as an example of a first class industrial health service. Prior to 1940, only the most rudimentary of first aid services was provided at the Austin plant. In that year, owing to war-time conditions and regulations promulgated by the Factory Department of the Ministry of Labor, steps were taken to expand the medical program. In October, 1950, the medical staff was composed of five full-time physicians, 15 nurses, and a number of laboratory, x-ray and other technicians, under the dynamic leadership of Dr. Donald Stewart. The central dispensary houses examining and treatment rooms, excellent x-ray equipment, electrocardiograph, clinical laboratory as well as offices, waiting rooms, record department, and other necessary facilities. In addition to the central dispensary, there are nine commodious sub-dispensaries located at strategic points over the sprawling works—each in charge of a registered nurse.

The Austin program, covering about 18,000 employees in October, 1950, includes pre-placement examinations for all juveniles, women, and men being considered for work in potentially dusty occupations. Periodic examinations are performed on those engaged in certain hazardous types of work, much as is the practice in the better occupational health departments in the United States. A unique feature is a large and well equipped rehabilitation workshop where partially disabled workers actually produce parts for use in the plant. Not only injured employees, but cardiacs, hemiplegics, and other types of handicapped persons are employed, and their production pays for between 60 and 70% of the costs of operating the shop.

The Austin rehabilitation program permits the concern to observe the spirit as well as the letter of the Disabled Persons (Employment) Act of 1944 which requires every employer of over 20 persons to employ a percentage of registered disabled persons. (The present percentage is three.) Since the term "disabled" has not been carefully defined, it has been hinted that some employers encourage employees with insignificant defects to become registered, and thus permit the employer to maintain the required number of "disabled" persons on the employment roster. As there may be certain advantages to being on the Register of Disabled Persons, cooperation on the part of employees is there were nearly a million names on it.

Slough Industrial Health Service

THIS program is important since it represents a significant effort to provide services for a group of small plants through a cooperative enterprise. A detailed description of the plan not difficult to obtain in the middle of 1949, appears in the December, 1950, *Am. J. P. H.*

The Slough program has been made possible by several fortunate circumstances: (1) geographic juxtaposition, in an area of about two square miles of about 250 firms employing a total of some 25,000 persons; (2) subsidy from the Nuffield Foundation and from the National Health Service; (3) imaginative and effective leadership on the part of the medical director, Dr. A. A. Eagger; and (4) an interested, enthusiastic staff.

The plan was inaugurated in 1947, and by the end of the first year of operation embraced about 100 concerns employing close to 10,000 workers. Subsequently, 30 additional plants have joined in the program, raising the total number of employees covered to about 14,000. Only one of the original firms has dropped out of the scheme. More than 90% of the companies employ fewer than 250 workers.

Services are provided through a central, fully-equipped dispensary, two outpost stations, and a mobile dressing unit mounted on a truck. Several of the larger plants in the group have their own medical departments with registered nurses in charge. An exceptionally fine rehabilitation center, in beautiful grounds near Slough, is operated as a part of the program.

The staff of the Service is made up of four full-time physicians, 10 registered nurses (plus four in individual plants), and a corps of assistants, technicians, physical and occupational therapists, and others. In addition, part-time services of a physician and an industrial hygiene engineer, from the London School of Hygiene and Tropical Medicine, are used for environmental surveys. These form an effective liaison between the Slough program and the School.

In the beginning, the bulk of the activities of the Slough Service were related to accident and casualty work. To a great extent this is still the case, although with the recent availability of the team from the London School of Hygiene, increasing attention is being paid to the control of environmental hazards. Pre-placement and periodic physical examinations are offered, but there is no fixed program of application except for juveniles. This latter group embraces all youths between 15 and 18 years of age, who, by law, must be examined on first employment, annually thereafter (up to age 18) and upon changing employment. The examinations are done by an Appointed Factory Doctor who is paid for this work by the Ministry of Labor and National Service.

The costs of the Slough program are met only in part by per capita assessments on the participating employers, in fact, these payments cover considerably less than one half of operating expenses. The balance is provided by the Nuffield Foundation and by the Ministry of Health through the Regional Hospital Board. The Ministry of Health also pays for the operation of the rehabilitation center. The participating concerns appear to be interested principally in the casualty work, and few have shown a desire to participate in a full-scale preventive program. It would seem that if a plan of this type is to be successful, the advantages of preventive medicine must be impressed on more of the employers so that they will be willing to shoulder a greater part of the expense of a complete industrial health service. The Director of the plan is aware of this, and efforts are being made in the proper direction.

Industrial Medicine and the General Practitioner

THE National Health Service Act, which is a part of the comprehensive social insurance program in Great Britain, provides for a tax-supported system of paying for medical care for the entire population. The merits and demerits of this program need not be discussed at this time. Every person, whether employed, non-employed, or self-employed, is required to make regular payments to the Ministry of National Insurance. Employers also must pay into the insurance fund. The size of the payment is greater for men than for women, and a lower rate applies to workers under 18 years of age. In addition to the basic rates, employed persons pay an extra amount for industrial injuries insurance, and employers match the amount of this extra payment. The unemployed (as distinguished from the non-employed), men past age 70, women past age 65, sick persons, those in full-time education, and persons with incomes under £104 per year are not obliged to contribute to the insurance fund, but receive benefits nonetheless.

The Minister of Health is responsible for providing medical services. In order to obtain these services under the National Health Service Act, every person must place his or her name on the list of a general practitioner. This physician then receives an annual capitation fee for each person on his list and in return is responsible for all ordinary medical services.

Industrial physicians in Britain, as in the United States, are paid on a salary basis by their employers, and up to the present time have not been a part of the National Health Service scheme. An employer who provides in-plant health services has the expense of this service in addition to that which he is required by law to contribute to the general program of social and medical insurance.

Workers employed in plants which do not have their own industrial health programs naturally receive all of their medical care, for both occupational and non-occupational injuries and illness, from or through the general practitioner on whose list they have enrolled. (Specialist and hospital services are arranged for by the general practitioners.) On the other hand, when a plant physician is available, he will care for most or all of the medical problems of occupational origin as well as for a certain amount of minor non-occupational illness. Services performed by industrial physicians have the effect of lightening the burden of the general practitioner but do not interfere with his income since he is paid an annual capitation fee unrelated to the number of medical services rendered.

In view of the fact that many, if not most, of the general practitioners are overworked, it might be expected that they would welcome any relief afforded through industrial medical departments. It appears that a certain number of the private physicians react in just that way, but this reaction is by no means universal. Some apparently resent what they consider interference in the care of patients for whom they feel responsible while others may object to comparison that might be made between their own overcrowded, poorly-equipped offices and the special facilities and services available in some of the industrial health departments. It remains to be seen whether employers will be satisfied to continue paying for the costs of medical services in plant dispensaries while at the same time they are contributing toward the costs of services of which the general practitioners are being relieved. Under the present system, some employers are actually paying twice for the same thing.

Compensation for Industrial Injury

MENTION has already been made of the fact that employed persons and their employers, are required to make a special contribution to cover benefits for industrial injuries. A single man over 21 years of age who is unable to work because of non-occupational cause receives benefits at a basic rate of 26 shillings a week, (about $4.00 at present rate of exchange). Women and young workers pay smaller premiums and receive smaller benefits. A married man receives 42 shillings a week plus 7 shillings 6 pence for the first child. There is an additional 5 shilling weekly family allowance for each child after the first. For purposes of reference, the average weekly earnings of adult, male workers in 1949 was just under 140 shillings.

A man who is disabled owing to an occupational injury or illness receives a basic benefit of 45 shillings a week plus the same supplements that were mentioned above. This higher rate of benefits is financed by the extra contributions paid by employed persons and their employers. Injury benefits are limited to a six-month period, at the end of which the worker may apply for a pension, the amount of which is proportional to the extent of the disability. The degree of disability is determined by a medical board of practicing physicians drawn from a panel and paid by the Ministry of National Insurance on a per session basis.

In addition to the panel physicians just mentioned, the Ministry of National Insurance employs two other types of doctors. One group of about 30 specialists is concerned exclusively with evaluating claims for disability due to pneumoconiosis. The other group consists of physicians attached to the 12 regional offices of the Ministry, there being two or three physicians in each region. These regional medical advisers review cases both before and after they have been evaluated by the medical boards and also pass on the question of causal relationship in claims for industrial disability benefits. The schedule of occupational diseases formerly employed for workmen's compensation cases is now being applied to industrial injuries claims. Poisoning by beryllium was added to the schedule in 1949 as the thirty-sixth recognized occupational disease. An Industrial Injuries Advisory Council passes on all proposed changes in the schedule.

Under the present system, workmen's compensation does not exist as it is known in the United States. Medical and hospital services are provided under the National Health Service Act, and indemnification for loss of wages is paid in the manner described above. Under this plan, employees as well as employers share in the payment of premiums to finance the benefits. Since premium payments remain the same regardless of the accident experience the economic stimulus for providing safe working conditions has been removed.

Because of the fact that the benefits for occupational disability are greater than for those of non-occupational origin, disputes inevitably arise. (A similar situation exists in those states in the United States which have sickness disability laws.) These disputes are referred to the regional medical officers of the Ministry of National Insurance. In the event of a decision which is unsatisfactory to the worker, he is permitted to appeal to a local tribunal composed of a representative of the employer, an employee or union representative, and a neutral member, usually a local lawyer. If still dissatisfied, the worker may appeal to other higher bodies.

In the event of permanent disablement a weekly pension is paid according to a schedule which provides from 45 shillings a week for total, down to 9 shillings a week for 20% disability. Disability pensions are paid regardless of the effect of the disability on earning power, which means that a person may continue collecting the pension even though he may subsequently earn as much as, or more than, he formerly earned. This differs from the majority of workmen's compensation laws in the United States in that in this country permanent disabilities are usually compensated for by lump sum settlements.

Partial disability due to pneumoconiosis is recognized and compensated for according to a schedule similar to that in use for other permanent disabilities except that the disability may be from 100% to as little as 10%. Victims of the disease are re-examined from time to time to see if there is any reason for changing the estimate as to the degree of disability. The physicians on the Pneumoconiosis Medical Panels and Boards recognize that there is no satisfactory objective measure of disability, but a large amount of research is being carried out, particularly by the Pneumoconiosis Research Unit at Cardiff.

Factory Inspection

THIS function is the responsibility of the Safety, Health and Welfare Branch of the Factory Department of the Ministry of Labor and National Service. The country is divided into eight inspection divisions and about 100 districts containing nearly 300,000 work places that come under the Factory Acts. These are covered by about 400 factory inspectors and 16 medical inspectors whose job it is to enforce the various factory codes and prosecute for violations. The medical inspectors may also perform surveys and studies relating to occupational diseases.

The factory inspectors are all qualified engineers and are concerned primarily with safety. If they suspect the existence of a health hazard they call upon the medical inspectors for advice. In cases where factory owners fail to observe the provisions of the factory acts the factory inspection service may institute legal action.

Should the employer be convicted of a violation, any employee who has been injured because of the failure of the employer to obey the law may bring a common law damage suit against the employer. The fact that the employee may already have received benefits under the Industrial Injuries Act does not bar him from civil suit. If he wins the suit, however, his industrial injuries payments may be modified.

Among the regulations for the enforcement of which the Factory Inspectors are responsible is one which requires medical examinations of all workers under 18 years of age. Mention has already been made of the fact that these examinations are performed by physicians known as Appointed Factory Doctors, formerly called Certifying Physicians. There are approximately 1,700 of these doctors, most of whom serve on a part-time basis, being paid on a fee-for-service basis by the Ministry of Labor and National Service. Another function of the Appointed Factory Doctors is to verify and report cases of occupational diseases. Many of these men serve as part-time plant doctors or as advisers to factory owners.

The British Medical Association (B.M.A.)

THE official position of the B.M.A. can best be presented by reproducing in their entirety two statements issued in 1949:

Statement Number One: British Medical Association. Duties of and Ethical Rules for Industrial Medical Officers (As approved by the Representative Body, 1949).

I. Duties: The duties which form the basis of the industrial medical officer's work vary considerably according to the needs of the occupational group in which he works. The following duties may be properly undertaken by industrial medical officers:

(i) Examination of applicants for employment and advice as to their placement.

(ii) Immediate treatment of medical and surgical emergencies occurring at the place of employment.

(iii) Examination and continued observation of persons returning to work after absence due to illness or accident, and advice on suitable work.

(iv) Health supervision of disabled persons.

(v) Periodical examination of persons exposed to special hazards in respect to their employment.

(vi) Maintenance of the efficiency of the nursing and first-aid personnel and equipment.

(vii) The study of the work and working environment and their effects on the health of the employees.

(viii) Advice to managements regarding: (a) The working environment in relation to health. (b) Occurrence and significance of hazards. (c) Accident prevention. (d) Statutory requirements in relation to health.

(ix) Health supervision of all employees with special reference to (a) young persons; (b) married women; (c) elderly persons.

(x) Medical inspection of canteen facilities and medical supervision of the health and hygiene of canteen workers.

(xi) Advice to those committees within the factory which are responsible for the health, safety, and welfare of the employees.

(xii) The arranging and carrying out of such educational work in repect to health and fitness of the employees as may be desirable and practicable.

(xiii) Advice to employees on all health matters relating to their work or working capacity.

ADVISORY NOTE: The industrial medical officer is advised to establish contact with other industrial medical officers and, where possible, with University Departments of Occupational Health and Government Departments concerned with the health of industrial workers. The latter include the Factory Department of the Ministry of Labour, which has on its staff a number of Medical Inspectors of Factories. The name and address of the Local Medical Inspector of Factories may be obtained from the District Inspector of Factories.

The Medical Research Council, at 38, Old Queen Street, London, S.W.1, has a number of special committees dealing with various aspects of industrial health research. Its work in this field is coordinated by the Industrial Health Research Board, and enquiries on research problems may be sent to the Secretary at the above address.

The Universities of Durham and Manchester have departments of industrial or occupational health, and the University of Glasgow a sub-department of occupational health, from which advice may be obtained. From time to time some of these departments conduct short courses of instruction in industrial medicine and hygiene.

II. Ethical Rules: Subject to statutory requirements these rules shall, where existing ethical rules or custom fail to cover the circumstances, govern the professional relationships of industrial medical officers with their medical colleagues in other branches of medical practice, with those employees under their professional care, and with managements. The rules apply not only to whole-time officers but also to those employed part-time or in any other capacity.

1. (i) When an industrial medical officer renders advice or treatment to an employee at the place of employment, and when in the employee's own interest he deems it advisable, he shall inform the employee's own doctor of the material factors. (ii) When an industrial medical officer finds on examination that an employee is unfit for work, he shall advise the employee to consult his own doctor or he may, in emergency, send him direct to hospital. (iii) If an employee is under the care of his own doctor or of a hospital and if at the place of employment there are special facilities for continuing treatment, the industrial medical officer may arrange for such treatment with the approval of the doctor or hospital concerned.

2. When in the course of an examination of an employee for superannuation purposes, retirement or special duty, material clinical findings come to light, the industrial medical officer should with the consent of the person examined inform his doctor of the relevant details.

3. Except in emergency, an industrial medical officer shall not undertake any treatment that is normally the responsibility of the employee's own doctor, unless it be with his agreement.

4. In his capacity as industrial medical officer he shall not undertake treatment of any member of an employee's family who is not employed at the same place of work.

5. A part-time industrial medical officer shall not utilize his position to influence an employee to choose him as his medical attendant.

6. An industrial medical officer shall not, except in emergency, or where a prior understanding with local practitioner exists, send any employee direct to hospital. When he considers that attendance at hospital is necessary or advisable, he shall refer the employee to his own doctor, to whom he may make a suggestion to this effect. When, in an emergency, an industrial medical officer sends an employee to the hospital, he shall inform the relatives (if the patient is likely to be detained) and also the employee's own doctor, where known.

7. When an industrial medical officer is asked by his management to report on the condition of an employee who is absent from work for health reasons and under the care of his own doctor, the industrial medical officer, before examining the patient, shall first communicate with the employee's doctor, informing him of the time and place of his intended examination.

8. An industrial medical officer should, whenever possible, respond to an invitation for consultation with an employee's own doctor.

9. An industrial medical officer shall not carry out any personal preventive measure which is purely experimental without the consent of the employee, and where desirable, the consent of the employee's own doctor.

10. The personal medical records of employees maintained by an industrial medical officer for his professional use are confidential documents. Access to them must not be allowed to any other person except with the consent of the industrial medical officer or with the consent of the employee concerned. An industrial medical officer shall at all times be responsible for the safe custody of his records. On the termination of his appointment he shall hand over his records only to the industrial medical officer who shall succeed him in the appointment. If there is no successor, the industrial medical officer retains his responsibility for the safe custody of his records or for their destruction.

11. An industrial medical officer shall not disclose his knowledge of industrial processes acquired by virtue of his appointment except with the permission of his management or when so required in courts of law.

12. When an industrial medical officer has examined an applicant for employment, and as a result of the examination employment is subsequently refused, the industrial medical officer may disclose his decision to the applicant and, when authorized, may disclose the findings to his own doctor.

ADVISORY NOTES: (1) When an industrial medical officer addresses a communication to the employee's own doctor and receives no reply within a reasonable time, he shall be at liberty to assume that the employee's own doctor takes no exception to the contents of his communication. It is important to the employee's interest that no opportunity of useful cooperation between the employee's doctor and the industrial medical officer should be neglected. Such cooperation may be of particular value when an employee is under treatment for an occupational disease of which the industrial medical officer has special experience. (2) Industrial Medical Officers should not make statements as to liability in the case of accidents at the place of work except when so required in courts of law.

Statement Number Two: British Medical Association. A Comprehensive Occupational Health Service (A Report of the Council, approved by the Representative Body, 1949).

Introduction. (1) It is the considered opinion of competent authorities, both medical and lay, that there should be an expansion of occupational health services. This is the opinion of important groups such as the Trades Union Congress, the Royal College of Physicians of London, the Association of Industrial Medical Officers, and the Association of Certifying Factory Surgeons. That it is also the general policy of the Government is shown by statements made by Ministers of the Crown at the International Congress on Industrial Medicine held in London in September, 1948. For example, the Minister of Labour and National Service, according to a report in the *British Medical Journal* of September 18, stated that he strongly supported the formation of a national industrial medical service, and that this was part of the Government's policy.

2. No detailed plan of how any expansion could take place has as yet been published. It is known, however, that the Factory Department of the Ministry of Labour is collecting information on the present medical situation in factories, and that a series of questions relating to the future developments of factory medical services was sent to employers by the Industrial Health Advisory Committee of the Factory Department.

3. For various reasons the contributions of the Factory Department to the promotion of health in industry are necessarily limited. The Factories Acts of 1937 and 1948 lay down minimum rather than optimum standards; there are many working communities which are not within their scope; and there are only about 350 inspectors available for visiting the 280,000 workplaces covered by the Acts. Moreover, owing to the nature of its relationship with industry, the factory department, through its visiting inspectors and Appointed Factory Doctors, can make only a very limited contribution to the solution of the psychological problems of individual and group character which recent experience has shown to be important in the industrial world. In short, advice, inspection, and statutory medical examinations, although important, form only part of an occupational health service.

4. In view of the limited scope of the Factory Department, nationalized industries and certain private industries, Government Departments, and public bodies responsible for the health, safety, and welfare of their employees have established their own medical services, realizing that a medical service for the group is necessary for promoting health at work. The 800 part-time and 165 whole-time medical officers in factories are now a vital part of the existing occupational health service.

GENERAL PRINCIPLES: (5) It is the view of the Council that there are certain general principles which are basic to any plan for expansion of occupational health services. These principles should form a guide to those persons on whom the responsibility may fall for planning, initiating, or supervising such services.

6. In the first place, the term "occupational health," and its scope, need definition. Occupational health is concerned with the study of individuals in relation to the physical and psychological demands of their occupations, and of work and the work environment in relation to their effects

on health. Occupational health now includes the subjects of industrial or occupational medicine, industrial surgery, industrial physiology, toxicology in relation to industrial hazards, industrial rehabilitation and resettlement, industrial or occupational psychology, and industrial hygiene and engineering. It must be clearly understood that non-medical experts, in collaboration with the doctor, play an active part in the promotion of occupational health.

7. An occupational health service is primarily preventive in character. It is intimately concerned with all human problems in the occupational group. It includes, or should include, (1) a hygiene or environmental service; (2) the assessment of fitness for different forms of employment; (3) a coordinated rehabilitation and resettlement program; (4) measures for the emergency treatment of injuries and illness occurring at the place of work; and (5) participation in research and various educational schemes.

8. Occupational health services should no longer be confined to the practice of medicine in factories. Already schemes operate in coal mines, in the transport and shipping industries, in public utility companies, for the staffs of hotels, restaurants, and shops, for large groups of clerical workers, and for university students. Evidence of the need for developments outside the industrial field is contained in the recently published final report of a Committee of Inquiry set up by the Home Secretary and the Secretary of State for Scotland (Health, Welfare and Safety in Non-Industrial Employment; and Hours of Employment of Juveniles, Cmd. 7664.)

9. No occupational health service can be successful without the full collaboration of all sections of industry. In any future plans, schemes for the provision of services, and the service themselves, must be acceptable to both managements and employees.

10. Further development and coordination by some central authority will be necessary before existing services can become comprehensive, before there can be broad integration of one type of service with another, or before a positive link can be created betwen occupational health and the National Health Service.

11. In the opinion of the Council, the Ministry of Health is the appropriate central authority to plan and supervise a national occupational health service.

12. This view is taken for the following reasons. First, it is considered a fundamental principle that an occupational health service should be supervised by the Government Department which already has general responsibility for the national health.

13. Secondly, the hospital and specialist services and the general-practitioner service now play an active part in promoting occupational health and will make an even greater contribution in the future. For example, the modern conception of the rehabilitation and resettlement of disabled workers and the need for expert clinical assessment of occupational diseases make an intimate link with the hospital services essential. So far as the general-practitioner service is concerned, a close liaison between the National Health Service and the occupational health service is important because any considerable expansion of the latter service can be effected only by the recruitment of general practitioners adequately trained to undertake work among occupational groups on a part-time basis.

14. Thirdly, the public health service administered by the local health authorities is likely to have increasing responsibilities in relation to occupational health. For instance, health services for small occupational units might be based on health centers provided by local health authorities. These authorities already have responsibility for the health of the school child, and it is generally accepted that a closer link between the school medical service and the health services for juvenile workers is desirable. Further, the public health service, by training and experience, has the preventive approach to health problems which is essential in the sphere of occupational health. Again, the responsibilities of the local authorities in connection with the location of industry and the provision of residential accommodation and transport services are intimately concerned with the health of the workers.

15. Finally, the Council considers that, so far as their contributions to the promotion of occupational health in any future occupational health service of a national character are concerned, the closest possible integration of the three divisions of the National Health Service should be effected.

16. The Council considers it essential that before there is any expansion of the existing occupational health service, the Ministry of Health should arrange surveys to ascertain the further needs of different areas and the particular character of the service required. Even after such surveys have been conducted, experiments in methods or providing services will be necessary before plans for a comprehensive service can be made. It is for this reason the Council considers it inadvisable to advance detailed proposals at the present time.

THERE appears to be a striking similarity in the essence and even in the wording of these statements when they are compared with some of those issued by the American Medical Association. The B.M.A. seems to feel, as does the A.M.A., that major responsibility for the therapeutic part of occupational medicine rests with family doctors rather than with the physicians in industry. Actual practice in Britain appeared to be quite similar to that in the United States with plant physicians treating most of the industrial injuries (since most of these are of a minor nature) as well as those simple personal illnesses in which on-the-spot treatment would permit the worker to remain at his job. If the definition of "emergency" includes these categories there is no violation of the code of ethics.

It is interesting to note that the B.M.A. recognizes the importance of some form of coordination between industrial medicine and the National Health Service and suggests that the Ministry of Health assume this responsibility.

In the course of this report, a number of names have been mentioned. They represent only a few of the many individuals whose courtesy and warm hospitality made the visit to England a most profitable and enjoyable experience. To those who were mentioned and to those who were not, expressions of deep gratitude are in order.

Vascular Complications in Fractures and Traumatology

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ALTHOUGH everyone is acquainted with the various vascular complications seen in fractures and traumatology of the extremities, insufficient attention has been given to the preventive measures and treatment of these conditions. We are herewith reporting a group of vascular complications in traumata, preferring to classify them as "avoidable" and "unavoidable." We will discuss the various diagnostic aids used in determining the vascular status of the extremities, and also the treatment of these vascular complications.

It is well known that certain vascular phenomena occur following trauma, and that these are generally part of the normal mechanism of injury. If, however, these phenomena exist for an extended period (for one reason or other), serious complications ensue, and permanent and disabling conditions result. In the aged, arteriosclerosis and other arterial diseases associated with traumatic injuries such as fractures, dislocations, etc., not infrequently result in irreversible physiological alterations, resulting in fibrosis or gangrene of the limb. This group comprises the largest number of cases and we feel, therefore, that a careful evaluation of the peripheral vascular system must be made before treatment of injuries. In children, also, permanent changes may occur following the use of tight bandages and casts during fracture treatment.

Inasmuch as the avoidable vascular complications in traumatology comprise our greatest number of problems, we will discuss, briefly, some of the common conditions in this group.

THE most serious conditions in this large group are usually due to the application of tight casts on extremities before physiological swelling has taken place. Skin-tight casts, carelessly applied—or applied by someone without experience—not infrequently lead to ischemia of the extremity, with gangrene, or to ischemic fibrosis of calf muscles, compartments, thigh muscles, or intrinsic foot muscles. The end result, as everyone knows, is a total gangrene of the limb, or a gangrene of a portion of the extremity. The less common causes of local tissue gangrene are due to various types of redresseur apparati, osteoclastic methods of bone reduction and, in the aged (with vascular disturbances) pressure from bedcovers or pressure from below—i.e., hard bed surfaces. Local tissue necrosis more frequently occurs in the aged, diabetic individuals.

The second group of cases to be discussed is that of traction gangrene. This is a term we have been using in order to indicate the cause of the gangrene in the extremity. Following a fracture of the femur, or a fracture of the neck of the femur, moleskin traction applied in the firm, conventional manner, may cause an ischemia of the limb from collateral circulation compression, with a total gangrene of the extremity or an ischemia with fibrosis and deformity. If traction of this type is applied to a normal extremity, it is possible to produce these same vascular phenomena, with the same end result. In flexion deformities of joints, where the structures have become shortened (blood vessels, etc.) traction, rapidly applied (over a one to two-day period), may cause vascular spasm, with ischemia and gangrene of the limb. We have had several of these cases, with resulting loss of limb and life. Occasionally, following a surgical operation, the tourniquet will inadvertently be left on the extremity (leg, thigh, toe, etc.). A tourniquet, so applied, can produce an ischemia of the part, with gangrene of the extremity. This occurs not only during wartime surgery, but has occurred in civil practice. Gangrene may also take place following a surgical procedure in a debilitated individual, or in a person with a far-advanced arteriosclerosis. Collateral circulation may, inadvertently, be ligated, or thrombosis may occur, following local hematoma formation, after surgery. Both of these factors may produce serious deformities, or actual loss of limb.

We have seen several cases of "cut downs"—for intravenous therapy in "prematures" and infants, with gangrene occurring in the distal portions of the hand or foot. These may occur in cachectic infants with a poor vascular system, or in those with a congenital absence of major blood vessels.

NON-GANGRENOUS lesions may occur in an extremity as a result of a tight bandage, cast or certain positional changes—if maintained over long periods of time. The posterior calf muscles, as well as the anterior tibial muscles, may be involved in this "Volkmann-like condition." Contracture of the capsule of the knee, or of the posterior capsule of the ankle, may result from vascular deficiencies following surgery. These problems are chronic, serious, and disabling. We have all seen local tissue necrosis, following the application of casts applied immediately after the fracture, or after open operative reduction of fractures.

Unavoidable vascular complications may be mentioned briefly. Trauma to an extremity, produced by heavy objects, may cause local necrosis and gangrene of a part. Careful cleansing and subsequent skin grafting usually are sufficient for a good end result. Fractures of bones, causing

Fig. 1.
Gangrene from thrombosis of large blood vessel, following hip joint surgery.

Fig. 2.
Gangrene of extremity from pressure of tibial condyle against popliteal artery.

direct impingement on blood vessels, with the production of aneurysms, or complete destruction of blood vessel continuity, cannot be avoided in this modern age of speed. Occasionally, a major blood vessel may be traumatized, with resulting spasm, ischemia, or gangrene of the extremity.

The most common non-gangrenous lesion of this group is the Sudeck dystrophy condition—(post-traumatic dystrophy) seen in distal joints, such as wrist and ankle, following trauma. It most frequently occurs in individuals with normal circulation and, occasionally, in those with reduced circulation.

The syndrome of bone atrophy, pain and vasomotor disturbances is well known. Post-traumatic psychosomatic disorders of the extremities all too frequently occur, with resulting physiologic changes, including color changes, edema, and even secondary motion limitation of joints. Thrombosis of large blood vessels, emboli and various types of aneurysms are also present following injuries of the extremities, with or without fractures.

THE diagnostic aids used in the detection of vascular diseases and in vascular complications are as follows: first, skin color alterations with changes of position—that is, the plantar pallor test and the dependency test. Palpation and auscultation of peripheral blood vessels is most important. Skin temperature determinations, using the electric thermocouple, are also important in evaluating the vascular status of the extremity. Oscillometric readings, at different levels, may be used if the patient is obese, and if palpation of the peripheral blood vessels is difficult. This gives the examining physician an idea of the vascular tonus of the large blood vessels. Other tests which may be used, but are not essential, are the fluorescein dye test, arteriography and venography tests, reflex vasodilatation tests, para-vertebral sympathetic blocks, and segmental plethysmography.

The treatment of these complications is of utmost importance. "Gentleness" should be the keynote in the treatment of any vascular complications in traumatology. It is most important to be "vascular conscious" in order to avoid disastrous end results.

A cardiorenal vascular survey, including fundoscopic examinations, is important in the elderly group in order to determine the general arteriosclerotic status. A vascular survey, as indicated above, is extremely important and necessary. Avoidance of trauma to collateral and main blood vessels during surgery, elimination or removal of all tourniquets, casts, bandages, and dressings, avoidance of sudden extension in correction of arthritic or fixed deformities, and avoidance of extensive surgery in the aged are some of the important preventive measures. Heat and cold, applied promiscuously to an avascular extremity, should be avoided. Preliminary sympathectomy or paravertebral block injections, as indicated, should be done. Foot hygiene, bed exercises, small doses of alcohol by mouth, as well as some of the commercial vasodilators and anti-coagulants should also be used in the proper cases. Embolectomy for occlusion of main arterial channels by emboli should be done, if indicated. For other complications, such as aneurysms and local tissue gangrene, surgery, properly done, is important.

IN CONCLUSION, therefore, one can state that vascular complications in traumatic conditions are not uncommon problems and lead, as is seen, to serious and disabling conditions, with loss of limb, or life. The age group requiring a vascular survey to avoid the "avoidable complications" is that between 50 and 70 years of age. Fractures of the hips and long bones in the aged should be treated carefully and gently in order to avoid major blood vessel injuries or collateral blood vessel damage. The treatment of these important vascular problems has been outlined.

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Health Maintenance of Key Personnel

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THE HEALTH maintenance of key personnel is a corporate problem. Machines can be replaced, as well as the men who run them. What cannot be replaced at will is the 10, 20, or 30 years of executive experience which is the most expensive factor of all.

Each key employee represents a substantial financial investment. As an executive, it is his duty to protect the company from financial loss by conserving his *own* health to the greatest extent possible. At no time in the history of our country has the health of the executive been so vitally important as it is now. In times such as these, the executive's health is not entirely a personal problem between his employer and himself, rather, he has now, in addition, a patriotic responsibility.

It is imperative for each employee to know what his health is, and to learn to live within the budget nature has given him. We are convinced the issue can never be dodged. Meeting it head on, the earlier the better, is the only solution.

Health of key personnel is intimately associated with personal ability, job assignment, and, in fact, total environment plus reaction to it.

Each man, like a piece of machinery, shows the effects of the stresses and strains he has encountered and weathered. Each "wears" at what is essentially an individual rate which is contributed to by the stresses undergone, previous disease encountered, and the quality of the individual's own tissues, especially his vascular system.

As noted by Habein,[1] of the Mayo Clinic, degenerative vascular diseases are continually increasing hazards to the health of modern man, especially of those persons who earn their livings by the use of their minds. A fascinating observation was made by Schwartz and Harvey[2] when they showed that in the case of the executives of New York's financial area there is a correlation between the day-to-day incidence of coronary attacks and fluctuations of activity on the stock market! The statistics of White[3] on the rising mortality rate for the cardiovascular diseases are a further indication of medical facts that must vitally concern all physicians whose duty it is to help maintain the health of key personnel.

It is obvious that no two individuals will react to the same set of circumstances, or will react in exactly the same pattern. This is where inherited tendencies, compensating factors, temperaments, native intelligence, etc., play their part.

The whole problem of job placement, the relation of man to his working environment, is daily assuming an increasingly important role in organization affairs. The understanding doctor, if the knowledge he possesses is correctly applied and understood, can be of considerable help to employee and employer alike. This is dependent upon the complete cooperation of the individual who recognizes something of his trouble and knows to whom to turn for help. The prescription involves the provision of a suitable working environment. From the point of view of management, this entire question is most important in executive development programs.

Present State of Health of Groups of Executives

FOR several years it has been company policy to invite key personnel to have a complete periodic health inventory. Of the total number invited in 1950, 92% responded; 8% did not—31 persons out of a total of 371 (Table I).

Of the 340 examined, 105 (31%) were found to have no disease, while 235 (69%) had medical problems which were investigated. These 235 persons represented a total of 277 medical diagnoses, 97 of which could be corrected. Of the 97 correctible disorders, 57% were sufficiently serious to impair the employee's efficiency at work, while the remaining 43% made no difference in working efficiency but did merit correction (Table II).

TABLE I.

PRESENT STATE OF HEALTH OF A CERTAIN GROUP OF EXECUTIVES

Total invited for examination	371
Total number responding	340
Total with no disease	105
Total with medical problems	235

TABLE II.

ANALYSIS OF MEDICAL CONDITIONS

Medical diagnoses made		277
Correctible disorders		97
Impairing work efficiency	55	
Not impairing work efficiency	42	
Non-correctible conditions		180
Impairing work efficiency prior to normal retirement date	137	
Not impairing work efficiency	43	

Presented at the Thirty-Sixth Annual Meeting of the INDUSTRIAL MEDICAL ASSOCIATION (A.A.I.P. & S.), Atlantic City, New Jersey, April 24, 1951.

In a total of 180 non-correctible conditions, 137 (76%) were of a nature to alter the individual's working capacity prior to his normal retirement date. In this group were included: (1) the high blood pressure cases, arteriosclerosis, coronary artery disease; (2) chronic arthritis; (3) the diabetic; (4) those placed in the wrong jobs; (5) occasional alcoholics; (6) those with chronic obesity; and (7) those with chronic varicosities of more marked degree.

As a rule, this group remains under more or less continuous medical guidance, with intervals between examinations determined by the examining doctor. Where required, the services of outside specialists are engaged. The 43 (24%) relatively unimportant uncorrectible defects which did not affect working capacity included hearing defects, flat feet, deformities, quiescent heart lesions, and inactive tuberculosis.

TABLE III.

COMPANY RETIREMENTS
JANUARY 1, 1938 — DECEMBER 31, 1950

Total number employees retired	295
At official retirement age	115
For medical reasons	65
For other reasons	115
Retired between age 51 and age 64 (all reasons)	
Total employees	171

TABLE IV.

PRESENT STATUS OF RETIRED EMPLOYEES

Total number retired	295
Total number still living	245
Died prior to age 61	14
Died after age 61	36

ANALYSIS OF EMPLOYEE AND ANNUITANT DEATHS

Total number of deaths:		
Employees	87	
Annuitants	50	137
Due to cardiovascular diseases		75
Due to cancer and neoplasms		29
Due to other causes		33

From January 1, 1938, to December 31, 1950, a total of 295 employees included in this study retired. Thirty-nine percent of these retirements were due to the employee's reaching the official retirement age of 65, 22% were medical retirements, and the remainder of 39% were for other reasons (Table III).

Fifty-eight percent of all retirements occurred between the ages of 51 and 64 inclusive, with 33% of this total represented by medical discharges (57 employees).

On December 31, 1950, 245 retired employees were still living, and 50 had died. Of the 50 deaths, 14 occurred prior to age 61, and 36 after that age had been reached. During this 13-year period, 87 employees died prior to reaching retirement, with 53 (61%) of such deaths occurring between the ages of 41 and 60 (Table IV).

Of 137 deaths (employee and annuitant), 55% were due to cardiovascular diseases, and 21% to cancer and neoplasms.

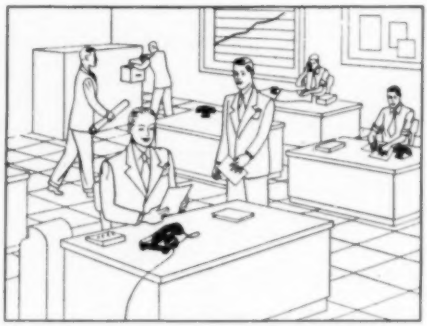

Fig. 1.

From an actuarial point of view, these facts and figures are not, of course, indicative of anything spectacular or unusual. However, if each case is considered on an individual basis, it becomes quite apparent that we are dealing with health problems of individuals, a large percentage of whom are in the age group of 46 to 60. This group, after all, is all-inclusive of the years during which the employee is most productive from a company point of view.

Now the question naturally arises, are any of these premature deaths preventable? The answer is an emphatic "Yes." In some groups, 50% or more of the deaths are due to diseases against which effective measures are available.

TO ILLUSTRATE this point of view, I shall describe several different types of key personnel as I have observed them.

It is agreed, I am sure, that not all key personnel are alike. For example, there is the extremely able individual, who, by virtue of his own innate abilities, reaches the top in an orderly fashion. If he is endowed with a healthy body which has received common-sense attention, he will carry his load well, provided, however, that he has an understanding family—a wife who is fully cognizant of the load he carries during the eight-hour working day and who has grown with him to his present status of responsibility. If, on the other hand, he does not have such a helpmate, but, let us say, a "social climber," then *he* may find himself with a broken home and divorce, or, as an escape measure, he may take on added extra-curricular activities which are time-consuming, or, he may begin to drink excessively to help himself bear his problems.

What I am saying here is that the able executive, instead of using the 16 hours away from the office to further a coordinated, happy existence, may get into a rut, and, not of his own choosing, may add insult to the already present degenerative disease tendencies. His actual life expectancy depends upon many things. Granted that he has been endowed with a brilliant mind, how well he has lived within his actual physical

Fig. 2.

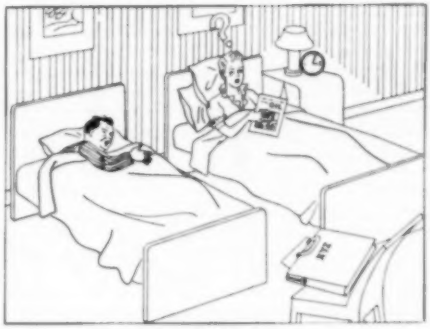

Fig. 3.

capabilities will determine to a marked degree what comforts and pleasures he will enjoy during his later years.

This is the type of executive, irrespective of his private life, whom everyone of ability likes to work for. He creates an atmosphere of enthusiasm. He is cognizant of talent and personal perseverance. At no time during his career does he worry about his own job. He is confident that he can always get a better one. As an able executive, he is likewise a good administrator; consequently, those who are fortunate enough to be associated with him are content. They know that when the time comes their readiness for promotion will be recognized. (Fig. 1.)

Many an executive position is held by a different type of a chap equally as successful from a business point of view as the individual just described. He is able to grasp the problems well, but has to do it by "boning"—carrying home the briefcase full of papers, burning midnight oil in order to acquaint himself with all the facts, perhaps to the consternation of a devoted wife, if he happens to be fortunate in this regard. If he has selected other than an understanding person for a helpmate, heaven help him when the time comes for arteriosclerosis, obesity, high blood pressure, and incipient diabetes. (Fig. 2.)

His 16 hours away from the office are now spent doing a thousand and one things which can be rightfully catalogued as detrimental and non-conducive to a healthful retirement. This type of executive has no actual problems to confront while on the job until the pressure of the 24-hour daily routine gets the best of him. Then he becomes an excellent candidate for intermittent attacks of constipation or diarrhea; he burps and regurgitates; his piles begin to trouble him; his homework lacks perfection in performance; he begins to eat too much; and he is apt to imbibe too freely. (Fig. 3.)

If he is fortunate and does not succumb to an acute coronary episode, malignancy, or an unforeseen accident, the chances are he will become eligible for retirement at the age of 58 or 60 on medical grounds. By this time his blood pressure has assumed an elevated level, his prostate has become enlarged, his hemorrhoids are really bothering him, and his job—his first love—has gotten the best of him. His actual life expectancy will be in direct proportion to the amount of time and attention he has given to compatible extra-company activities and the character of his private home life—whether or not his wife, children and grandchildren are a comfort to him.

This individual may or may not be a good administrator. Those whom he knows are aware of his limitations. When promotion time comes around, he is prone to have favorites and these men are sometimes selected to the disapproval, of course, of the more able ones. As a result, more executives of limited capacities assume power and influence over a younger crop of able possibles.

In any large organization, there are men in key positions who, individually, are intelligent, moderately aggressive, and have a likeable personality. This sort of man is content with his lot and is perfectly satisfied to get in the swing of things, keep his nose clean, and not get into trouble. He performs his job satisfactorily, offers a few suggestions, and when he does is sure of his ground and is confident in his own mind that his immediate superior will approve.

If this type of individual continues on an even keel, and if his home-life and extra-company activities are in keeping with his mental and physical capacities, he has a good possibility of reaching "three-score years and ten"—and plus, perhaps.

If, on the other hand, this same individual, by virtue of his long and faithful service to the company, suddenly is elevated to a position of extreme importance requiring not only knowledge and skill of the basic problem but also broad administrative responsibilities, many things may happen. He may suffer an immediate nervous breakdown. (Fig. 4.)

He may fuss and fume at home, causing an unanticipated family incident. He may continue

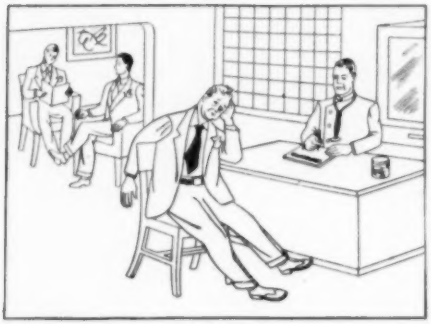

Fig. 4.

Fig. 5.

on the job for years. As the years go by, he becomes more and more dependent upon those under him. Again, favorites may be singled out for promotion and the organization of his department leaves much to be desired. Such a situation may continue until this executive reaches a normal age of retirement.

However, the following set of circumstances not infrequently occurs. A new manager or president appears on the scene—a recession is in the offing, or profits are off. Maybe he is imbued and fortified with all of the modern concepts of efficient management. He learns about the department head in question. He spends some time with him and learns to his amazement that this department head is totally incapable of performing the duties of his present assignment. (Fig. 5.)

There are two roads to follow—demote him, or retire him. If the new manager has a superficial knowledge of the broad policies of the company, he will just demote him and say nothing more about it, leaving the Medical Department to pick up the pieces. If he is a true executive, he will seek advice and guidance, based on individual facts, as to how to handle the particular problem. This individual requires a complete medical inventory.

This must be very thorough. The entire past medical history is carefully reviewed and his occupational history from date of first employment scrutinized. His present physical condition is determined by a physician particularly well trained in the art of diagnosis and human understanding.

Now the doctor is in a position to analyze the individual from a physical and temperamental standpoint, and is able to make sound recommendations to the patient. With the patient's consent and in his interest, the physician may make general recommendations to management. When doing so, he must not divulge the confidential details that led him to his conclusions.

This confidential doctor-patient relationship, an essential of good professional ethics, is required medical policy. An employee cannot be expected to divulge all of the intimate details of his medical and occupational difficulties (and possibly domestic difficulties as well) unless he is positive that his confidences will be respected. On the other hand, without these facts the doctor would be unable to make well-considered and constructive recommendations.

COULD all the medical facts be told in an individual case such as this, the record might read something like this:

An amiable employee, through no fault of his own, has assumed a position of importance within the company for which he is neither capable nor suited. A thorough medical examination reveals an aging individual, prematurely arteriosclerotic, whose physiologic age is in excess of his chronological age. Other more subtle signs of stress—facial expression, wrinkles, peculiar mannerisms, tics, apparent lack of self-confidence, poor attire, etc.—may well be associated.

How can we as doctors help this individual? It is clearly evident that he needs help and wise advice. It is also obvious that the pharmacopoeia lists no drugs that will help him. We can prescribe a sedative or a vitamin, or even male hormones, but a much more fundamental and basic solution must be reached.

When more flexible policies have been established to govern retirement, the solution can be reached far more logically than it is today. Dr. John Wittmer,[4] physician and Vice-President of a large corporation, illustrated the point by his observations on the question "Are Graybeards White Elephants?" It is clear, as he says, that some executives at ages short of 65 have become liabilities to their companies and that their retirement should be possible, and agreeable, when they have reached that state. On the other hand, there are key personnel who give promise of being efficient and valuable long after 65, and, where they would prefer to continue working, it seems arbitrary and uneconomic to force them into retirement.

The approach of the doctor in industry must be by the same scientific methods inherent

in all good medical practice. The facts must all be discovered. They must be tabulated. A considered diagnosis must be arrived at. Such a diagnosis implies a comprehension of etiology as well as pathology and physiology. When it is arrived at, the treatment follows in due course.

When treatment involves a surgical procedure, or suppression of an infectious agent by antibiotics, it is simple compared with some of the complex factors involved in a situation of this sort. In dealing with a key individual it is assumed that he has intellect and insight, with help, to understand. If so, he can contribute largely to the solution. If not, the problem is more difficult.

In either case, the medical role must remain purely advisory. The physician must never accept an executive point of view. In other words, he is an expert, bound by the definition. He must maintain the necessary detachment to keep his judgment unclouded. He must recognize his own limitations, many of which are inherent in any biological equation. He must know those things which are probable from those which are possible, or improbable. A seemingly unimportant detail may deflect the end result widely. When all this is assembled, he must advise his patient in accordance with the Hippocratic precepts, and considered judgment. The question arises how to conciliate the interests of this individual with those of his employer who is now confronted with the problem of a long-service, faithful employee who is not only mal-assigned but who is older in body and mental faculties than his actual chronological age suggests. By the very nature of his work he has been assigned to a "thinking" job in contradistinction to a "physical" or "manual" job, which makes it still more difficult to find an equitable solution.

Retirement appears to be the only way out. From a strictly medical point of view this man might well be considered as totally and permanently disabled on medical grounds for any and all future assignments within the company. This, I am told, is often costly. The actual life expectancy of such a person is not necessarily shortened by such happenings. His actual state of mind, as well as that of his immediate family, is duly affected by the actual severance treatment received.

MUCH more could be said and many more individuals could be described. However, from a medical point of view, such a grouping helps us approach constructively the medical problems of all key personnel.

It is evident, I believe, that normal physiologic health—the actual state of an individual's mind and body from a strictly medical point of view—has a tremendous effect upon the individual concerned as well as upon those with whom he is directly associated—his superior and those *on whom he is dependent*.

Whenever an employee is retired on medical grounds, the possibility for cure is most remote. On the other hand, the probabilities for the prevention of similar situations among the executives of tomorrow are quite bright, and, in my opinion, will be in direct proportion to how well executives of today analyze their own individual situations and plan their lives accordingly.

There need be no mystery in the practice of medicine such as we are often led to believe. The principles of sound medical practice involved are simple, practical, and easy to understand. They do not differ from those of other situations. It is simple to explain to an anxious parent, whether he is a prominent executive or a day laborer, the need for the removal of his child's adenoids when they are obstructing the air passages. It is accepted readily by the same parent that it is not good sense for a child to practice two hours a day on the piano, carry a heavy curriculum at school, and have dates four or five nights a week. He knows that it is not good for a normal growing child to burn the candle at both ends. But to apply such basic concepts to himself when his personal career appears to be at stake is decidedly another matter. For some unexplainable reason, the individual here shies away from the truth, and yet I am sure if he is truly an able executive, he must know what ultimate probabilities are in store for him in so far as future health and security are concerned.

Although the principles of the practice of medicine are simple, we must avoid over-simplifications. Because a certain number of business executives are found, for example, to be suffering from exhaustion and lowered blood sugar values,[5] we should not automatically blame exhaustion on hypoglycemia, as Portis *et al* have suggested. We should determine the blood sugar where indicated, but often it is just as important to ask some discreet questions about the patient's working and home environments.

I firmly believe that, if all the cards are placed on the table, a general agreement will usually be reached if management and the medical department consider an individual in detail from their respective viewpoints. If a man is capable of carrying out, to management's satisfaction, an assignment of a magnitude and duration entitling him to a healthful retirement, he will prove, from a medical point of view, to be an individual who is fully cognizant of his own physical and mental capacities. On the other hand, if he is found to be derelict in respect of his personal health responsibilities, the chances are management can also find flaws in his business capabilities.

Granted that there will be exceptions to this broad principle, it is nevertheless the consensus of several persons who, in my opinion, are authorities upon this subject, that the general statement is sound. Of course, it is always management's prerogative to make an assignment of a given duration to an individual of acknowl-

edged merit, irrespective of what effect it may ultimately have upon the employee's personal well-being. However, from a long range point of view, I question the advisability of such a practice except under most exceptional circumstances, and then the individual should be protected in all ways possible. It is never sound practice to waste human resources.

Moderation, with ultimate health security, is a practical slogan for the executive of tomorrow. Each individual must live within his resources, and everyone concerned should be prepared to help achieve this end.

It is my belief that excesses have much to do with the state of health of both mind and body. The effects become more apparent and take greater toll as the age of working activity approaches completion. *As relatively few able executives live long enough to reminisce on the joys of their past accomplishment, perhaps a program of subtle moderation could be inaugurated.*

Louis Dublin,[6] a foremost authority on medical statistics, points out that retirement often has unfavorable effects on the health of persons who have geared their whole lives to their working environment. The physician has a responsibility to help prepare his patients *during their working years* for the transition. Their lives in retirement should continue to be happy and socially valuable if this period of adjustment is properly planned and carried out.

There are many warnings signs of poor health or impending disease. It is the physician's job to point out the danger signals. Heeding them will often permit the physician to make an early diagnosis of a condition that can be corrected before it kills, or, if not corrected, materially modified. The important danger signals and what they mean must become more common knowledge. When they are more fully understood and appreciated, the individual executive will perform his daily routine in keeping with his physical and mental capacities. If he does so, he is bound to be more productive to himself and to his company. This may entail limitations which may seem difficult to cope with at first. In the long run, however, less food, less liquor and tobacco, less travel, more exercise, more leisure, planned vacations, more delegation of authority to those in subordinate positions, will prove of benefit to all concerned.

These are, without question, accepted facts. To apply them to key personnel of today is an individual equation and must be done with honesty, much tact, and oftentimes personal persuasion. It must be done within the delicate code of a true doctor-patient relationship. The task is tough and appreciation is rare. However, *for those executives of tomorrow, from the viewpoint of health,* the problem is less complex, providing, of course, the executives of today acknowledge the problem and are willing to do something about it.

Actually, an adult who is not cognizant of his own physical and mental limitations is in danger; he needs medical advice and guidance. Neither this man, nor the one who *is* cognizant of his limitations but fails to live within them, is first-class executive material. On the other hand, an executive who knows what he can and cannot do from the standpoint of his health and who conducts his life accordingly, can live a happy life, useful to himself. He is a source of strength to his family and to his employer.

Bibliography

1. HABBIN, H. C.: Health of the Executive. *Indust. Med.*, 11:218 (May) 1942.

2. SCHWARTZ, G., and HARVEY, JOSEPH: Coronary Artery Disease in a Financial Area. *Med. Rec.*, 153:311-313 (May 7) 1941.

3. WHITE, P. D.: Heart Disease, p. 249-263. The MacMillan Company, New York, 1946, pp. 1025.

4. WITTMER, JOHN J.: Are Graybeards White Elephants? Personal communication to the author, October, 1950.

5. FORTIS, SIDNEY A., ZITMAN, IRVING H., and LAWRENCE, CHARLES H.: Exhaustion in the Young Business Executive. *J.A.M.A.*, 144:1162-1167 (December 2) 1950.

6. DUBLIN, LOUIS I.: Public Health and Diseases of Old Age. In SIMMONS, J. S.: Public Health in the World Today, p. 229-242. Harvard University Press, Boston, Massachusetts, 1949, pp. 332.

Leadership

THE LEADER is somewhat more intelligent than the average of his followers. However, he is not so superior that he cannot be readily understood by those who work with him.

The leader is a well-rounded individual from the standpoint of interests and aptitudes, and knowledge with respect to a wide variety of fields.

The leader has an unusual facility with language. He speaks and writes simply, persuasively, and understandably.

The leader is mentally and emotionally mature. He has come of age mentally and emotionally as well as physically.

The leader has a powerful inner drive or motivation which impels him to strive for accomplishment.

The leader is fully aware of the importance of cooperative effort in getting things done, and therefore understands and practices very effectively the so-called social skills.

The leader relies on his administrative skills to a much greater extent than he does on any of the technical skills which may be associated directly with his work.

—CECIL E. GOODE, *Personnel*, March, 1951.

Dentistry at the Ford Motor Company

GRANT MacKENZIE, D.D.S.
Dearborn, Michigan

THE Ford Motor Company employs more than 135,000 men and women in its plants across the United States, more than 70,000 of these in one plant—the Rouge at Dearborn. The manufacturing operations are not believed to be more hazardous than those of any similar industry. Actually safety records show that it is less hazardous to work in a Ford plant than it is to work in most manufacturing establishments.

Our safety engineers build thousands of different kinds of safety guards right into the machines the employees operate. We furnish our employees with several million devices further to protect them, such as gloves, aprons, goggles, shoes, and correction-ground shatterproof glasses.

Those who are familiar with industry know that no matter how hard one tries, no matter how one designs a machine, or how one plans to protect an employee, he is faced with human carelessness, and human disregard for apparent dangers. Because of this we know that we shall have a certain number of dental injuries each year. To reduce lost time from these accidents we maintain at the Rouge plant a complete dental service, consisting of a laboratory and operating room. In other plants where the need is less, as fewer employees are involved, we make arrangements for industrial dental care through regular private practicing dentists, unless a particular system has been established by a state agency. Usually, in the smaller plants, this means that an employee suffering from a dental injury will be treated at company expense by his own dentist.

IN JUNE, 1916, the Ford Motor Company opened its first industrial emergency hospital at its Highland Park Plant, then the major manufacturing unit of the company. This was considered the finest industrial hospital in the country at the time and included a clinical laboratory, a pharmacy, an x-ray division, an operating room, a re-dressing room, an eight-bed ward, an ophthalmology department, and a complete dental department.

The dental department was established to give full treatment to dental injuries, to give employees advice regarding personal dental problems, and to provide emergency relief for dental pain. The department had its own operating room and its own laboratory, and was staffed by a full-time dentist and laboratory technician.

In the economic slump that followed World War I the company offered non-industrial dental care to employees at the Highland Park plant. This service included extractions, fillings, and crown and bridge work, and full and partial dentures for which minimal charges were made. These charges were paid through payroll deductions from the earnings of the employees who took advantage of the service. As the country's economic condition improved, this program was dropped, and the dental department again devoted its full time to accident cases, palliative treatment and advice.

When the Rouge plant at Dearborn replaced the Highland Park plant as the major manufacturing center of the company, the dental department was transferred to the Rouge.

During the depression of the thirties, the company again made available its dental facilities and personnel to those who desperately needed dental care. This time it opened temporary dental clinics in two towns near Dearborn where a great number of Ford employees lived. There, it offered regular dental service both to company employees and to the Ford unemployed. The clinics were open from 9:00 A.M. until 12:00 noon. Appointments were handled by a registered nurse, and the Ford dentist concentrated on treatments such as extractions and fillings and taking impressions for full or partial dentures. These impressions then were returned to the dental laboratory in the Rouge hospital where the dentures were completed. Hundreds of persons benefited from this service. Our outside clinics, however, again were closed when economic conditions made them no longer necessary.

The pressure of war work and the increased employment in Ford plants during the World War II made it necessary to reopen the dental department in the Highland Park plant and to establish a new dental department in the Willow Run Bomber plant where an additional 40,000 persons were employed. Both Highland Park and Willow Run had full-time dentists on duty, but all laboratory work was sent to the Rouge unit.

At Willow Run it was found that while many of the dental hazards involved in manufacturing B-24 bombers were much the same as those in building automobiles and trucks, the bomber plant workers developed, nevertheless, dental problems peculiarly their own. On being assigned to the bomber plant, I found that a great number of injuries to anterior teeth were being sustained. This was due to riveting. On one particular operation, the man bucking the rivets had to lie on his back and hold the bucking bar (which flattens the rivet end) above his face. Each time the bucking bar slipped, there was a dental injury. This problem was solved by

Presented at the Seventh Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL DENTISTS.

requiring the men on this operation to wear a boxer's ordinary rubber mouthpiece.

During World War II it was found necessary again to provide employees with a certain amount of personal, non-industrial, dental care because of the shortage of outside dentists. It was also found that absenteeism was reduced.

At the end of the war both the Willow Run and Highland Park dental departments were closed, and the company's staff dental services were concentrated again at the Rouge. I wish to reiterate that while we did not then and do not now provide full dental care in 40 different plant locations, we do arrange facilities so that all Ford employees are given full industrial dental care. When economic conditions or other factors make it necessary, the company broadens this service to include a certain degree of personal dental care.

TODAY, when an employee in the Rouge plant requires dental care he notifies his foreman and requests a medical clock card. The foreman notes the time on the card and the patient reports to the nearest first aid station. If dental attention is required, the clock card is stamped "transferred to the main hospital from first aid" and the patient is driven to the hospital. It might be pointed out here that the Rouge plant covers nearly 1200 acres and has several miles of roadways within its boundaries. Hence, the necessity of driving a patient from his work location to the main hospital and back can be readily understood. Upon arrival of the patient at the hospital's dental office, a record card is made. This includes the patient's name, address, age, badge number, department number, social security number, the diagnosis, history, x-ray findings, and primary treatment. When the therapy for the visit is completed, a memorandum is made on the dental daily record sheet, and the employee's hospital card is initialed, and the time he leaves the office noted at the bottom of the card. The patient receives his regular pay during any treatment time. If he requires further treatment, he is told when to report back to the dental office and this is noted on his hospital card. If the case involves an injury from an industrial accident, a report is sent to the safety department so that the safety engineers can investigate and make recommendations for the prevention of similar accidents.

Patients with fractures of the maxilla or mandible are sent to the Henry Ford Hospital in Detroit where they are treated by the Department of Oral Surgery.

A charge is made against each department in the company for the dental work its employees receive. As the department is made aware of its actual dental expenses, it works more diligently to eliminate dental hazards.

We do not include oral examination with our pre-employment physical examination, nor do we give periodic oral examinations to all employees. Any employee who comes to the dental department requesting an examination, gets it. He is told the findings, and the treatment to be received from the family dentist is suggested.

It often has been suggested that we also provide prophylaxis semi-annually to all employees. But with more than 70,000 in the Rouge alone one readily can see that such a program is too ambitious for one dentist. For the past three years we have averaged 3,300 visits per year.

AT THE meeting of the American Association of Industrial Dentists in Detroit, in 1949, the late Dr. C. O. Sappington presented a paper on a number of industrial hazards and discussed their oral manifestations. He suggested that we report to him our findings on the problems listed. In looking over the list I find that while a number of our employees work with many of the chemicals Dr. Sappington named, the controls on these chemicals developed by our safety and industrial health departments have reduced the hazards of working with them to the point of non-existence. One particular problem that we had was that of the "tack spitter." As you know, "tack spitters" are employees whose jobs require the nailing of many tacks. No one yet has discovered how to keep these employees from filling their mouths with the tacks and removing them one at a time as they nail them. We have a number of such employees who work in the upholstery and trim departments. The complaint was that the tacks caused ulceration of the oral mucosa. While we had not found it a major problem, we checked the matter with our industrial hygiene department. The industrial hygienist inspected the tack bins, made extensive tests of the tacks themselves, and talked with the men employed on these jobs. He reported that the tacks were clean and comparatively free of pathogenic bacteria. To be doubly safe he recommended that we install new dust-proof bins with sterilizing lamps built in, which was done. Since then we have not had a single complaint of mouth ulcers arising from this work. Controls such as this and the one used on the listed chemical jobs have held these operations within the "safe zone." The controls are checked carefully and frequently.

Many ask how we get along with the private practitioner. An harmonious relationship is enjoyed. We draw the employees' attention to many oral conditions that must be referred to their family dentists. We also "carry" a great many patients for their private dentists—this means that we replace many temporary fillings, treat many dry sockets, and, also, remove sutures.

The industrial physician of our staff often sends us patients to check for foci of infection. This is especially true of the ophthalmology department where stubborn, chronic eye conditions are seen that do not respond as they should to treatment. A fine cooperation with our medical staff prevails in all our relations.

INDUSTRIAL MEDICAL ASSOCIATION

The President's Page

THE RECENT convention of the Association in Atlantic City was the occasion of several innovations. In a probable order of descending importance, these included a change in name from American Association of Industrial Physicians and Surgeons to the shorter INDUSTRIAL MEDICAL ASSOCIATION, a new set of By-Laws for the Association, a partially new group of officers, and new opportunities and responsibilities. Skipping over the next several items in this descending order, we come to a new assignment for the Association's president, that of preparing a monthly report for the *Journal of Industrial Medicine and Surgery*. All advisers on this assignment are agreed that it is one which should have been carried on for some time.

The activity of greatest current moment to the Association is perhaps that of inspection and approval of industrial medical departments. This program, together with the personnel immediately responsible for its work, was taken over from the American College of Surgeons by the American Foundation of Occupational Health. This was made possible by a generous grant of money to the Foundation by several member firms of the American Iron and Steel Institute. The affairs of the Foundation are managed by three trustees who are respectively the President, the Secretary, and the Managing Director of the Association. The full scope and direction of the inspection and approval activity will be determined after full consultation with the remaining officers as well as with the directors of the Association and with an advisory board of trustees. There is a general understanding that the activity will be carried on by the Foundation at a level at least equal to that at which it was carried on by the American College of Surgeons.

An activity which may hold greater interest for most members of the Association than the foregoing is that which has to do with the creation of a specialty board for our field of practice. The Association's officers have for the past 10 years energetically worked toward this end. They will continue this effort in cooperation with representatives of other organizations with the reasonable hope that the objective will be achieved within two more years. As an integral part of this activity, attention needs to be focused upon the growing number of programs of graduate training in this special field of practice. The next school year will see a sizeable increase in the number of Fellows in training as a result of Fellowships provided by the Atomic Energy Commission, the Rockefeller Foundation, the Industrial Hygiene Foundation, anonymous sponsors among charitable organizations and major business concerns, and governmental agencies. The content of the training courses is a proper matter of concern of specialists already in industrial practice. Their opinions in this matter may be effectively expressed through the channels of the Association.

There is a real need for active participation in the affairs of the Association by a greater number of its members. Administrative changes have been initiated with this objective in view. These will be carried forward as far and as fast as is consistent with the Association's welfare according to the collective judgment of its directors and officers. As of the present, there is agreement that the administrative interests of the President may in large measure be delegated to other members of the Executive Committee, and that Association committee appointments are to be more widely distributed. The usefulness of this policy will be measured by the cooperation demonstrated by those with work assignments, as well as by the number and quality of constructive suggestions from the membership at large.

The Association is asked with increasing frequency to participate with other organizations in programs carried forward by such organizations or by quasi-governmental bodies. Representatives of the Association on such assignments have done their best to present views that probably conform with those held by a majority of the Association's members. An effort must be made to develop formally-expressed Association policies with respect at least to the relatively noncontroversial matters of this type so that the Association's representatives in the activities in question may take positions based upon policies rather than upon intelligent guesses as in the past. The methods for gaining clarification and expression must, however, themselves be studied first. Two methods among several that may possibly be suitable are the direct circulation among the membership of questionnaires of the opinion poll type and the clearing of resolutions through the Association's component societies.

NO PRESIDENT of the Association has begun his term of office under more auspicious circumstances than now exist. The Association is financially in good health, it stands for a sound set of principles, the times are opportune for the promotion of these principles, and its members possess ability and energy which are equal to the opportunity. A discussion of the problems, over-all plans and accomplishments related to this opportunity will be a regular feature of this Page.

A. J. Hammer

1951 General Motors Medical Conference
GM Physicians

Bottom Row—Left to Right: R. L. Johnston; H. M. James; C. Hanna; J. H. Genschow; A. R. Sirna; E. F. Lutz; M. R. Burnell; W. F. Cooper; A. F. Lecklider; C. D. Selby; E. A. Irvin; A. J. Hamilton; G. E. Kohler; A. K. Droz; A. A. Tower; F. M. Apfelbaum.

Second Row: M. P. Benoit; J. H. Clevenger; P.J. Oschner; S. R. DeMeter; F. W. Irwig; C. C. Coady; R. N. Baldwin; A. K. Smith; W. D. Tillson; E. E. Chiarulli; A. L. Brooks; B. V. Myers; J. Fauster, Jr.; N. E. Leyda; R. G. Colyer; F. J. Barkman; J. M. Schwartz.

Third Row: M. M. Shafer; E. J. Nugent; C. E. Carlson; J. A. Kane; J. W. McClellan; J. A. Curtin; G. Paul; R. A. Young; R. D. Wigent; G. H. MacDonald; P. L. Blackmon; J. D. Kelly; K. B. Kullbom; H. J. Brisbois; R. P. Bell; W. C. Gibson.

Fourth Row: A. C. Moore; M. L. Hole; C. M. Worley; J. C. Barnard; W. F. Hickman; C. W. Ward; H. Harper; P. B. Rastello; A. B. Thompson; F. R. Ferlaino; J. L Gillespie; G. A. Eadie; F. Popper; C. M. Bonzey, Jr.; M. C. Kiser; P. J. Kunderman; J. Bielawski.

Fifth Row: W. L. Baughn; T. J. Bruegge; R. H. Hamilton; F. V. Kowals; G. F. Van Gorder; M. Martinus; H. J. Kreulen; R. S. Van Harn; C. L. Samuelson; J H. Stunz; J. W. Jameson; W. B. Cullinan; G. Sudimack; R B. Robson; P. N. Barton; J. M. Lynch.

Sixth Row: T. E. Lewis; E. H. Place; J. Scherschel; D. J. Flynn; W. J. Fulton; P. Gradolph; E. Wolff; O. J. Preston; Edwin DeJongh; R. C. Swan; D. J. Wood; R. M. Brown; L. J. Berg; S. D. Steiner; J. V. Williams; M. Boylan.

General Motors Medical Conference

ON APRIL 22-23, 1951, immediately preceding the Annual Meeting of the INDUSTRIAL MEDICAL ASSOCIATION (formerly A.A.I.P.&S.) 100 General Motors physicians from 16 States and Canada gathered for their Annual Medical Conference at Chalfonte-Haddon Hall, in Atlantic City, New Jersey. DR. W. F. COOPER, Medical Director, General Motors Holdens, Melbourne, Australia, travelled half-way around the world to attend the two Conferences. Registration took place on Sunday afternoon, April 22, at the General Motors Headquarters in Haddon Hall. An informal social hour and buffet supper followed. On Monday, April 23, the physicians in two half-day scientific sessions met in the Music Room of the Chalfonte Hotel. These were presided over by DR. MAX R. BURNELL and DR. EARL F. LUTZ, Medical Director and Associate Medical Director of General Motors. The Conference concluded with a reception and banquet at Haddon Hall Monday evening, April 23. Representatives from the American Medical Association, the New Jersey State Medical Society and the INDUSTRIAL MEDICAL ASSOCIATION were present as guests of the Corporation. MR. GEORGE A. JACOBY, Director, Personnel Services Section, General Motors, Detroit, presided as toastmaster. The banquet address "The Problem Drinker in Industry" was given by MR. RALPH M. HENDERSON, of Yale University. One of the highlights of the Conference was the "Gadget Display" on view at the General Motors Headquarters during the General Motors Medical Conference and the INDUSTRIAL MEDICAL ASSOCIATION meetings. The display consisted of 14 special items pertinent to industrial medicine, developed by General Motors physicians and found to be especially useful in their departments. DR. REEVE M. BROWN, Medical Director, Chevrolet Motor Division, Tonawanda, New York, acted as Chairman of the display.

BOOKS

Working Life

TABLES OF WORKING LIFE: Length of Working Life for Men. Bulletin No. 1001, United States Department of Labor, Bureau of Labor Statistics, Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.; Price 40 cents, 1950, pp. 74, paper, Multilith.

THE smallest unit of the population that concerns an insurance actuary is 100,000 of a sex all born on the same day. Year by year some die, until there is no survivor. All this is duly recorded by the actuary who provides himself with this life table. Rumor has it that life insurance companies are governed by antiquated life tables and conversely that modern ones materially would reduce premium rates. That item is no objective of the present stint.

Long overdue are adequate comparable work tables for industrial workers, male and female. Previous materials have been spotty but sufficient

to the guidance of insurance companies in the fixing of favorable or unfavorable rates for many occupations. Clearly it is statistically difficult to provide any tables when the entire work population for some occupations is represented by such figures as 5,000. In much of industrial medical work as well as insurance companies, work tables for the entire work force as well as by trades and professions, would influence programs and activities.

Now better work tables are accessible for males and prospectively for females. While the chief data are for 1940 as the end year, some embrace 1950. Tables exist for variations as to rural and urban groups, whites and non-whites. In common respects these work tables are similar to life tables.

Those compilations as to specific occupations indicating prospective deaths and retirements (the two not segregated) give rise to speculation and perhaps wonderment. It would appear that blacksmiths, forgemen, and hammermen head the list of disappearance from their trades. Welders stand at the bottom of the listing in the most favored position. College professors are located between foundrymen and machinists.

Bartenders statistically as to disappearance from their work enjoy a rate highly preferable to university presidents—"once a bartender always a bartender!" Since these are severance rather than mortality tables, possibly after all the college instructor has some advantage over the much better rated restaurant waiter; he is so much more likely to go into another occupation than is the waiter.

Medicinal Chemistry

MEDICINAL CHEMISTRY. ALFRED BURGER, Associate Professor of Chemistry, University of Virginia, Vol. 1, 1951, Interscience Publishers, Inc., New York, pp. 577, $10.00.

THIS author, innocent of a planned stratagem, gains favor by the last sentence in his preface: "The writer's wife deserves thanks for not minding too much 1200 quiet evenings while the manuscript was being prepared." In the past much of medicinal chemistry apart from physiological chemistry has been submerged within pharmaceutical chemistry. Without either condemning or ignoring the admirable chemistry of the pharmacist, this book provides some lines of segregation with accent upon the chemistry of therapy and prevention. Without mere borrowings this book is a mosaic of pharmacology, toxicology, physiological chemistry, pharmaceutical chemistry, and general chemistry. And yet it has a personality all its own—a new scientific entity—medicinal chemistry. All the self imposed restrictions on coverage are respected. Easily the concept may be advanced that the reaches of medicine recognize no limits as to its sources of beneficient agents. The plastic chemist seeking a superior coating for electrical wiring, may instead contrive a substance superior in combating gastric hyperacidity. Another industrial chemist without evil design may achieve a product of promise to industry but sadly with properties injurious to every exposed workman. That too becomes medical if not medicinal chemistry. Well aware of all such, the author addresses himself to the immediately more important, the chemistry of therapeutics.

Before presentation of hundreds of specific substances, six chapters are general in character. These prove the most provocative of the entire 28. Within, clarification may be found on such items as chemical structure and biologic action, drugs in relation to enzyme systems, drug tolerance, habituation and drug resistance. Then come the details—A to V—Adrenalin to Vitamins.

A second volume is inevitable—not ready—but ready by September, 1951. Vol. II carries the story through 15 more chapters from hormones to antiseptics. Any book review, gently or shoutingly says to the reader: "Buy" or "Don't Buy." In this instance the exhortation is to the author: "Write more. The medical profession will profit by the record of your thinking."

Pneumoconiosis

THE SOCIAL CONSEQUENCES OF PNEUMOCONIOSIS AMONG COALMINERS IN SOUTH WALES: P. HUGH-JONES and C. M. FLETCHER, Medical Research Council, No. 25, London: His Majesty's Stationery Office, 1951, Price 1s. 9d.

IN ALL of the British Isles there are approximately 649,200 employees in the collieries. In South Wales the number is near 108,200 (all as of 1947). In the British Isles from 1931 to 1948, 22,000 miners were certified as presenting pneumoconiosis. Of this number 19,000 were in South Wales. Actually the number is larger since appreciable numbers have not been examined for certification. This marks South Wales as a "hot bed" of pneumoconiosis causation. Of this 19,000, 5,000 are unemployed or unemployable. The plight of this group of 19,000 constitutes the basis of this brochure official report. If this Welsh situation is appalling to those in the United States, let it be in mind that in this country the estmated number of miners with some degree of pneumoconiosis approximates 220,000. The dusty lung diseases are far from complete control anywhere.

Public Health's Future

TOMORROW'S HORIZON IN PUBLIC HEALTH. Public Health Association of New York City, New York, 1950, pp. 109.

THE Public Health Association of New York City, a voluntary health agency, eschewing the crystal ball as a scientific instrument of finality, takes a look at public health's future as guided by the experience of the past. If for no other reason, this brochure might well be read for its presentation of excellent language. May it be hoped that this document of prophecy through its own example, presages an era of betterment in scientific exposition. This volume of guarded premonstration embraces addresses of eight notables in public health, (Galdston, Gordon, Kruse, Perkins, Felix, Osborne, Smillie, and Ginsberg). For some of the eight the auguries are not so clear, and some limit their divinations to the near immediate. The distant-sighted or at least the more outspoken seem to see the certainty of social medicine and with it threats to voluntary health organizations as now constituted. Voluntary health agencies ever have sought the day when they might disappear because of functions fully accomplished. Disappearance into the machinations of state medicine is an end little wanted.

The parceling up of man and his miseries by voluntary agencies is decried. It is implied that a hundred over-organizations specifically grab off the

victims of goiter, diabetes, myasthenia gravis, spasticity, multiple sclerosis, cancer, psoriasis, and on through medical nomenclature—all with little regard for the whole man. If there be no "Jockey Strap Itch Society," perhaps it is not yet too late.

Running through this booklet are isolated items that make one sit up straight. For example, and historic, is the record that the A.M.A.'s present Section on Preventive and Industrial Medicine and Public Health was organized as the Section on State Medicine. If such ancestry riles, some surcease may be found in that in that day State Medicine was the near equivalent of our present Forensic Medicine.

Solidly identified with occupational medicine, the statement among other pregnant ones is that the requirement of a suitable mental work environment is just as needful as a physically healthy environment.

Portions of this brochure are aggravating. Aggravating because of uncertainty as to leanings of some public health leaders; uncertainty as to what words were intended to communicate; uncertainty as to all omination. This well-calculated but constrained look into public health's future is command reading.

SCIENCE MINIATURE

Beryllium as a Sensitizing Agent

CAREY P. McCORD, M.D.

ON OCTOBER 19, 1948, E. C. Crocker, of the A. D. Little Laboratories, privately disclosed an experience with beryllium salts long before the period of any suspected toxicity of that substance. Crocker was seeking new body deodorants. He applied to himself and three or four laboratory associates patch tests with beryllium chloride. The results were unsatisfactory as to prospective use as a deodorant and the project was abandoned. Within 30 days Crocker sought recreation at a beach near Boston on a sunshiny summer's day. Soon one bare arm presented greater inflammation and discomfort than other parts of the bared body and more than expectable from judicious exposure to sunlight. Within a few hours it developed that the area of severest action was that to which the patch test had been earlier applied. The outing was curtailed and three days spent in bed. On return to the laboratories other subjects revealed similar but minor experiences after bare-armed work in a garden, a fishing trip or such. It was concluded by Crocker that ultra-violet rays were responsible but the matter was not pursued.

In 1948 concern was widely directed to an unknown "factor X" as the excitant to some forms of beryllium poisoning and in explanation of the causation of the bizarre remote cases. On this account, following the Crocker lead, prompt work was instituted to check his observations. By the date above mentioned intense sunlight had disappeared from the Detroit latitude. Notwithstanding, patch tests with beryllium nitrate, 5 or 10%, buffered with NH_4OH or NaOH to pH 4.4, were self-applied October 22, 1948, and travel south started seeking adequate sunlight. Partially acceptable sunlight was found at the Kentucky level. Exposure was undertaken with variations as to time, area, percentage, etc. By the end of the fifth day no response either initially or after sunlight appeared. Resort then was made to artificial ultra-violet and infra-red rays on some of the same areas but with added ones including added variations. While a mild erythematous dosage was desired and requested severe burns were provided both for some treated and control areas. The presence of bullae called for pressure bandages for some days. During this period there were uncertain reasons to believe that the beryllium treated areas had been mildly modified both by artificial ultra-violet and infra-red rays.

By the end of the eleventh day after the first artificial ultra-violet ray radiation, healing of the ultra-violet burns was substantial but redness persisted and desquamation was in evidence. On the evening of that day (November 6, 1948), 15 days after initial application, 14 days after first natural sunlight exposure, 11 days after artificial ultra-violet exposure, all areas that had been treated with beryllium nitrate regardless of the form of irradiation, concentration or duration of patch tests (except in casual painting) all in the same hour became elevated, edematous, rugose, indurated, intensely pruritic, and all with edges sharply corresponding to the size of the patch test. No area untouched by beryllium responded whether irradiated or normal.

In letters descriptive of this condition written a few weeks later the following language appears: "From trace amounts in patch tests, employing beryllium nitrate (5% and 10%) buffered to pH 4.4, we have been able to obtain no local reaction on a primary irritation basis in a person so tested for the first time. However, about the twelfth or thirteenth day after utterly no indication of skin damage from beryllium, all such areas suddenly and actively developed severe responses characterized by edema, induration, marked itching, and after a few days by almost verrucosity or at least papillation beyond any expectations. 'Warty' may be the word. The lesions are distinctly violaceous. It takes about one month for the lesions to subside to a state of ordinary redness. We are sure that ray exposure is not necessary to bring about the allergic state that we believe the above response to be."

On November 19, 1948, the lesions of this presumed allergic response to beryllium were demonstrated to the RAMAZZINI SOCIETY, near Pittsburgh, Pennsylvania. Because of current expansion in the concept of beryllium action on the basis of allergy, these somewhat casual early observations may have appeal.

PRODUCT RESEARCH AND DEVELOPMENT

Articles selected for publication in this section of the Journal are related to commercial or prospectively commercial products and, by requirement, are written by physicians, represent original work not previously published, and have some flavor of newness. These articles are published so that newer products may become the recipients of further consideration and appraisal in the industrial medical field. The claims and conclusions of authors are not necessarily approved or accepted by this Journal.

The Use of Phyatromine in Industrial Injuries

A. H. STAHMER, M.D.
Stahmer Clinic
Wausau, Wisconsin

IN OUR practice we encounter a large number of industrial accident cases, including lumbosacral and sacro-iliac strains, wrenched or wry necks, wrenched or pulled shoulders, pulled ligaments and other such strains. We have treated over 200 such cases in the last 30 months. About 80% of these are lumbosacral and sacro-iliac strains with referred leg pains. The conventional types of treatment—application of heat, active or passive exercise, taping, and other forms of physical medicine—give relief in most such cases, but they usually require too long a period to correct the condition and restore usefulness to the affected part, so that the worker can resume his employment with the least amount of time lost. Injuries of this kind, which are usually caused by heavy lifting or moving heavy objects, or exposure to outdoor elements, although not serious, are painful and incapacitating.[1]

In the endeavor to obtain a medication which would most quickly relieve the pain, and most effectively minimize the incapacitating effects, of such injuries, we began the use, about two and a half years ago, of a stabilized solution of physostigmine salicylate and atropine sulfate.*

Our routine regimen is daily intramuscular injection of 1 cc. of this solution for two or three days, thence twice-weekly for two or three injections, and once weekly for usually one or two injections. However, in the majority of instances, about 75%, the muscle spasm was relieved, with a marked decrease in pain, after two to four injections. In these cases treatment was continued. The patients noticed considerable improvement after the first or second injection. About 50% were given diathermy treatment along with the injections. Not all can tolerate diathermy; in many instances treatment intended to continue for 30 minutes has had to be terminated at five minutes. In the cases of industrial injury in whom there was evidence of a co-existing rheumatoid condition, and/or traumatic neuritis, the patients were treated according to the regimen used in treating rheumatoid arthritis and related conditions, as reported in an earlier paper.[2] It is significant from an economic standpoint that 60% of our patients have been kept on the job when given treatment with this solution.

In the two and a half years of using this medication we have given 2000 1-cc. injections, to approximately 200 patients. About one-third were given for the relief of spasm in industrial injuries, and about two-thirds for relief of muscle spasm in arthritic conditions. The successful use of the medication in these conditions is significant because in some of the patients with occupational injuries involving muscle spasm osteoarthritis was also present. A comparatively larger percentage of these injections has been used in the past year and a half. After we were convinced of the efficacy of the medication by consistently good results, our use of it in relieving muscle spasm became much more frequent.

Physostigmine is known to relieve muscle spasm.[3] It not only affects the smooth muscle which is a well-known reaction, but it also affects the transmission of nerve impulses which are responsible for the muscle spasm, as attested to by its effectiveness in relieving spasm in arachnidism,[4] and in rheumatoid conditions.[2,5,6] Atropine counteracts the action of physostigmine on smooth muscle, thus minimizing or obviating the unpleasant side effects of increased peristalsis, salivation and blurring of vision.

THE following cases cited are representative of the types of injuries which were treated in our series:

Case 1—Mr. A.L., 32, slipped while he was working and developed acute pain over the left lumbosacral area. He had definite tenderness over the area of the third and fourth lumbar vertebrae, two inches left of the midline, and acute pain with muscle spasm in this area. After three injections he was completely relieved of pain, the muscle spasm subsided, and he was able to return to work. The injections were given at two-day intervals.

Case 2—Mr. A.C., 36, slipped while lifting a heavy oil barrel, injuring himself to the extent that there was severe pain, with definite tender-

*Supplied under the name Phyatromine® by Kremers-Urban Company, Milwaukee, Wisconsin.

ness, in the left sacro-iliac area. Two injections immediately relieved the pain, and enabled him to return to work.

Case 3—Mr. R.D., 26, slipped in the bathroom, after which he developed severe pain over the lumbosacral area, with definite tenderness in the third and fourth lumbar area. He had had at least six similar attacks previously, and had to be extremely careful when lifting any object. An x-ray study of the spine revealed no definite pathology. After seven injections he states that for the first time in two years he is able to turn in bed without experiencing definite pain in his back.

Case 4—Mrs. W.A., 53, came in on August 4, 1950, reporting severe pain in the back. She had the clinical picture of a slipped disc. After one injection she was greatly relieved of pain. However, four days later the pain recurred. A second injection failed to give any relief. She was then referred to the State of Wisconsin General Hospital, where surgeons removed the largest disc ever observed in that institution. Since then we have referred to this institution two other patients who seemed to get relief from one injection but no relief from subsequent injections. Both were diagnosed at this institution as having slipped discs.

Case 5—Mr. E.A., 37, slipped while working with a large pipe wrench and developed severe pain in the lower back. The x-ray findings were: "No recent bone or joint pathology. Spina bifida occulta of the first sacral vertebrae. Some wedging and irregular intervertebral articular margin of the eighth and ninth dorsal bodies." The pain experienced by the patient was so severe that he was placed in the hospital and required to remain quiet for nine days. Little relief was obtained, and he was taped and permitted to return home. However, 10 days later he again presented himself to the author, stating that the pain was nearly as severe as it had been when he was admitted to the hospital. At this time treatment with our medication was started. He obtained relief from pain within a half hour after the first injection. After three injections on alternate days, he was greatly relieved of pain and felt much better. A fourth injection was given a week later. At that time he stated the pain had subsided entirely, and he returned to his job. He received a total of four injections.

While heretofore it was necessary for us to refer many of these cases for physiotherapy, the relaxation of muscle spasm obtained with our medication has reduced greatly the number of cases requiring it. Physiotherapy is effectual and is needed in many cases, but it is time-consuming for the injured employee whose production and earning power have been curtailed and must be restored. Much less time is required for our injections, and the worker stays on the job.

With the definite relief which we have obtained in treating these injury cases, we can reasonably expect some degree of relief in almost every case, so that if a patient reports no relief at all, the question of malingering is immediately brought to our attention.

CONCLUSIONS: The stabilized solution of physostigmine salicylate and atropine sulfate known as Phyatromine® is an excellent medication for relief of muscle spasm in occupational injuries such as sprains, back, neck and shoulder strains, pulled ligaments, and similar injuries in which there is skeletal muscle spasm; it is effective in relaxing the muscle spasm, alleviating pain, and improving the range of motion of the affected part, thus enabling the injured worker to return to work earlier; it improves the physiological and nutritional state of the affected parts, resulting in more rapid recovery; it can take the place of physiotherapy in many cases; it may serve as a check on malingering; it is equally as beneficial in relieving backache as is infiltration with procaine solution; and, as reported in a previous paper,[2] it is efficacious in relaxation of skeletal muscle spasm in arthritic conditions.

References

1. COHEN, A., and TROMMER, P.: Physostigmine for Muscle Spasm in Rheumatoid Arthritis. *J.A.M.A.*, 130:265 (February 2) 1946.

2. STAHMER, A. H.: The Use of Physostigmine and Foreign Protein Therapy in Arthritis and Related Conditions. *Wisconsin M.J.*, 49:1020 (November) 1950.

3. GOLDMAN, J., and COHEN, A.: The Use of Physostigmine and Neostigmine Therapy in Neuromuscular Dysfunction Caused by Trauma. *J. Lancet*, 66:415 (December) 1946.

4. HOLLOWAY, O. R.: The Use of Physostigmine in the Treatment of the Black Widow Spider Bite. *J. Arkansas M. J.*, 47:75 (September) 1950.

5. SHAPIRO, S., and WEINER, M.: Physostigmine—The Clinical Response in Arthritis of Long Standing. *M. Times*, 78:557 (December) 1950.

6. MARSHALL, W.: Clinical Study of Physostigmine Preparations in Relief of Muscle Spasm and Pain. *J. Lancet*, 70:391 (October) 1950.

Why?

ONE of the imponderables of all time is: why *must* we whisk around the car ahead in order to be the first to arrive at the next stop light? Why *must* the kindest, most courteous gentleman in the world become the all-American lout the moment he takes the wheel of his automobile? Safety authorities have compiled reams of statistics on traffic problems, but it is probably safe to say that they have not yet come up with the answers to these fundamental questions.

—J.I.S., on Editor's Page, in *Bull. St. Louis Med. Soc.*, June 15, 1951.

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Spinoza and Silicosis

THERE are no standards by which we may rate the world's greatest music, or book, or culture, or soldier, or thinker. Nevertheless, unabashed by the absence of acceptable criteria, many mature thinkers living and dead have tossed aside rational restraints and shouted their conviction that Benedict (or Baruch) Spinoza possessed the world's greatest intellect. The claim will not be pressed. Let it be agreed that the records of Spinoza's thinking reveal one of the fine minds of all time. To the mind of Spinoza Christ was first among men. He denied the divinity of Christ but accepted him as the greatest of the prophets.

Spinoza was a Dutch philosopher who lived from 1632 to 1677. He was a descendent of a Portuguese Jewish family driven, like many others, from their land by the Inquisition. Warmhearted Holland absorbed many of these expatriates—this to the cultural prosperity of Holland. Generations later, boyish Baruch Spinoza was the prize student of the synagogue. Like Christ he confounded the elders. His ultimate philosophy would have made all good Jews into good Christians and all good Christians into good Jews. This was heresy. Baruch Spinoza was excommunicated. Jewish excommunication is no casual act. The Jewish Baruch was further removed than any leper. Baruch became Benedictus.

It is not Spinoza's ranking as the "father of modern philosophy" that provides this page of print—worthy as he is of unlimited pages. Apart from all such, Spinoza is strikingly identified with occupational medicine. The excommunication provided that. Under the old Hebrew canon every Jewish male was required to learn a manual trade. Benedictus was of no impoverished family, but he fortunately acquired a trade. He was proficient in the grinding of prisms and lenses. Banished by his race and his family, he dwelt in the home of a Menionite family. There he plied his trade in order to live. No philosopher then had access to the syndicated column. No eager publisher guaranteed a sale of 100,000 copies of every manuscript. And therefrom springs our tale. Spinoza probably died from silicosis. How do we know? We don't. Not until more than two centuries later did that term first appear. Not until more than two centuries later was the x-ray discovered. Autopsies were taboo. Knowing the dustiness of grinding quartz, knowing the absence of any protection, knowing his familial medical history of tuberculosis, knowing his complaints typical of silicosis, some justification attends the belief that silicosis along with tuberculosis prematurely removed from earth, at 45, one of its splendid benefactors.

Modern industrial medicine scarcely is chargeable with guilt in depriving the world of the wisdom of this god-intoxicated man's maturer years. But it can find no enjoyment in the linkage with his undeserved death from an occupational disease.

"Only Man Is Vile"

THE LATE, little lamented first half of the twentieth century stirs the dour mind to carping. Born in war, it ended in war. To war add depressions, pestilence, income tax innovation in the U.S., the rise of practical communism, the A-bomb, pestiferous governmental controls as the shortest route from democracy to com-

munism, Roosevelt, the "tomfoolery" of pseudo-mystical science, self-imposed labor slavery, the philosophy of everything for nothing, misfeasance, malfeasance, and non-feasance of public officers, character degeneration, and the unholy wastage of our natural resources. Calamity piled high on adversity. For the majority of the country's dazed population all that has happened is normal — the only life they know. Few is the number that may make unhappy comparisons with the gay serenity of the 90's. Few now alive are aware of the sacred shouting of real patriotism of the 80's and 90's when stout-hearted men and women proclaimed "My Country right or wrong." The carping mind might wish to banish the first one-half of the century with disdainful gestures meaning good riddance—decades of sogginess. All that might be well if the immediate future augured betterment. Of this there are presently no lambent omens.

BUT AWAY with dour minds. This half century has been brilliant and magnificent. In medicine more achievement has been our lot than for all previous time assembled. The life and work span has been extended beyond the fondest expectations of the biostatisticians. Public health has come into full flower. Major pestilence has succumbed to vaccines, chemotherapy, and antibiotics. Poverty in this country has all but disappeared for those willing and able to work. The automobile alone has changed the geographic face of the country and modified nearly every aspect of life. Apart from being the all-time greatest man-killer, the automobile has proved to be the half-century's greatest boon. The place of aircraft in our lives so has been identified with and stigmatized by warfare as to be marked with gore. Its peace-time actualities and potentialities may not be denied. Our future is a lusty aircraft future. The advent of radio and television as a contribution to the period, warrants volumes were their influences to be recorded in embracive fashion. But all of this is a trifling listing. Mechanically and materialistically we have reached a golden age. So much newness abounds that many persons may well feel that nothing has ever happened before. Only the pessimists may believe that this tempo of achievement might not continue perennially.

Only man remains vile. Man's low qualifications are the horrible ulcer on civilization. Man persists an untamed, despicable creature. He is his sole enemy, continually threatening to devastate that which he has wrought. His meanest depravity is his transferring to oncoming youth his age-old record of failure wholesomely to take advantage of his splendid world.

Erratic man's greatest need is to undo himself, to listen to the good that is ever within him. The future, however potentially grand, can not be consummated without major resurgence in concepts as to what is really important—human understanding, sustained peace, tolerance, unselfishness, admiration and conservation of those who achieve in forthright fashion, ruination for those who seek to destroy. If man may become regenerated, the awing spectacle of the first half-century's material attainments may bequeath to the next a period of life never equaled in those years in which man has been on earth.

Hyperergy

AMONG susceptibles, the number of whom is legion, minor elevations or depressions in the ambient temperature may incite prompt rhinitis, bronchial spasm, urticaria and/or vomiting. It is possible both that other response indications may arise and that excitants other than temperature variations may be causative. These susceptibles may quickly react to drafts, and exposure of different portions of the body to temperature variations as little as 4 or 5° F may be damaging even when all temperatures fall within comfort requirements. The victims frequently state, "I am catching a cold." However the duration of any manifestation may be as brief as 10 minutes. At times the condition is followed by, rather than progresses to, more serious respiratory affections. Widely these phenomena have been designated as "cold allergy" or "heat allergy." It is postulated that this state constitutes "hyperergy"—a state resulting from the outpouring of histamine following external stimulation as mentioned. It is not known that antibodies are involved or that the number of eosinophiles is increased. However it is specified that hyperergy may arise among some persons who are truly allergic, and all such may display the laboratory characteristics of allergy. It is anticipated and perhaps proved that hyperergy responds to antihistaminic therapy and thus may have entered statistically into the compilations on "cold" therapy, whereas the immediate episode (but not the susceptibility) spontaneously disappears in brief time. Hyperergy enters industrial medicine on occasion as the basis of claims alleging sensitization to some agent in the work environment. Since sudden exposures to temperature variations are common to all aspects of life, such claims may be viewed with doubt.

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1. Martin-Scott, I.: Brit. Med. J., 1:837, 1949.
2. Overton, J.: Brit. Med. J., 1:840, 1949.

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NEWS, COMMENT, OPINION

INDUSTRIAL HYGIENE FOUNDATION'S Sixteenth Annual Meeting will be held at Mellon Institute, Pittsburgh, on Wednesday and Thursday, November 14 and 15, 1951. A panel on Conservation of Executive Health will be a feature of the Management meeting on Thursday.

The Minerals

THIRTEEN different minerals are considered essential and must be present in man's diet for normal life and health. Two are found commonly deficient, calcium and iodine. Liberal use of dairy foods (milk, cheese, and ice cream) insures adequate intake of calcium and contributes substantial quantities of phosphorus, potassium, sodium, chlorine, magnesium, and sulfur. Significant quantities of zinc, copper, and cobalt are also found in dairy foods. Use of iodized salt insures adequate intake of iodine. One part per million of fluorine in the common water supply will insure an intake of fluorine at a level helpful in the prevention of dental caries and non-injurious to health. A good mixed diet including dairy foods, eggs, meat, fruits, vegetables, and cereals is needed to insure adequate intake of all minerals.

—*Dairy Council Digest*, 22:5 (May) 1951.

One Teaspoonful of Salt . . .

ONE teaspoonful of salt, one half teaspoonful of baking soda, and one quart of water"... This may become the SIMPLEST AND MOST VALUABLE PRESCRIPTION IN HISTORY—the solution to be used orally for burns and other types of shock. It could fill the need in case of mass disasters when parenteral saline couldn't be given to all those affected.... It is said to be palatable. The exact prescription would read, "3 to 4 grams of sodium citrate per liter of water, with baking soda used in place of citrate when the latter is not available." .... As much as 10 liters of this hypotonic solution may be drunk in 24 hours by an adult.... The idea is that of Rosenthal, but the recommendation has been made, by the potent Surgery Study Section of the National Institute of Health, to the Surgeon General.

—GUILLERMO OSLER, M.D., in *Arizona Med.*, March, 1951.

"The Far-Sighted Approach"

LORAND V. JOHNSON, M.D., Associate Professor of Ophthalmology at Western Reserve University, in the Spring issue of *Sight-Saving Review*, publication of the National Society for the Prevention of Blindness, makes these points: (1) "Few major industrial plants fail to provide trade schooling or apprenticeship for their skilled employees. How many provide training for their industrial physicians?" (2) "I know of no medical school which does not have in its curriculum a course in tropical medicine. I likewise know of but few which have an adequate chair of industrial medicine, where interested students may elect to obtain sound training." (3) "I know of no medical school where industries or associations of mutually interested industries have provided for themselves research and training facilities in industrial medicine." DR. JOHNSON praised the "far-sighted approach" of the Cadillac Division of General Motors. "Their desire," he declared, "for well-trained and capable industrial physicians has led them to obtain approval by the American Medical Association for practical experience gained in their dispensary toward internship in industrial medicine. The students, upon completing medical school, apply for this combined residency, wherein during two years they spend alternating six months' periods in an accepted hospital and in the Cadillac dispensary where some remuneration is provided. Certainly men so trained have a background and a vision which equips them for life-time specialization in industrial medicine."

National Doctors Committee

ROBERT COLLIER PAGE, M.D., Chairman of the National Doctors Committee for Improved Federal Medical Services, on May 19 announced the completion of an advisory committee of experts from every branch of the medical profession. They will consult with the Chairman on matters of policy in the pending campaign to secure wide economies and more efficiency in the present overlapping and competing system of hospital and medi-

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cal care operated by the government. DR. PAGE, who is Medical Director of Standard Oil (New Jersey) also announced that his general committee will carry on an educational program for the benefit of 178,000 doctors. He said that this project is rapidly growing. The National Doctors Committee is an affiliate of the Citizens Committee for the Hoover Report, which is urging passage of the recommendations of the bipartisan Hoover Commission for the unification of the various governmental medical agencies under a single authority. The slogan of the Doctors Committee is "Not more government in medicine but better medicine in government." The advisory committee has been formed to include high-ranking men in the 20 major divisions of medicine and surgery and the allied technical skills, as follows: Anesthesiology: CHARLES FLETCHER MCCUSKEY, M.D., Los Angeles; Dermatology and Syphilology: DONALD M. PILLSBURY, M.D., Philadelphia; General Practice: SAMUEL ARTHUR GARLAN, M.D., New York, and RUFUS B. ROBINS, M.D., Camden, Arkansas; Internal Medicine: MAXWELL MYER WINTROBE, M.D., Salt Lake City; Cardiology: GEORGE EDWARD BURCH, M.D., New Orleans; Medical Education: RICHARD HALE YOUNG, M.D., Chicago; Neurological Surgery: HOWARD CLIFTON NAFFZIGER, M.D., San Francisco; Obstetrics and Gynecology: CHARLES DENTON KERR, M.D., Houston, Texas; Ophthalmology: DONALD MARSHALL, M.D., Kalamazoo, Michigan; Orthopedic Surgery: LEWIS M. OVERTON, M.D., Albuquerque, New Mexico; Otolaryngology: CLAIR MICHAEL KOS, M.D., Iowa City; Pathology: THOMAS BYRD MAGATH, M.D., Rochester, Minnesota; Pediatrics: LEE PALMER, M.D., Louisville; Physical Medicine: GEORGE D. WILSON, M.D., Asheville, North Carolina; Plastic Surgery: JAMES BARRETT BROWN, M.D., St. Louis; Preventive Medicine and Public Health: BRIG. GEN. JAMES STEVENS SIMMONS, M.C., Boston; Psychiatry and Neurology: HERBERT SPENCER RIPLEY, M.D., Seattle; Radiology: ARTHUR BRADLEY SOULE,, JR., M.D., Burlington, Vermont; Surgery: RICHARD KENNEDY GILCHRIST, M.D., Chicago; Thoracic Surgery: HENRY SWAN, M.D., Denver; Urology: CHARLES RIESER, M.D., Atlanta.

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"Color-Conditioning"

IN ANNOUNCING a 20% rise in productivity at its dry-cell battery plant, Vidor, Ltd., a British firm, attributes a large share of the credit to the changed attitude of workers brought about by the planned use of color in the factory. Of the 970 workers, 740 are women. Throughout the factory colors are kept light, fresh, and functional. The basic color scheme provides for pastel green on the lower walls, yellow above, and paler yellow for the roof girders, the general effect being to "open-out" the factory and remove any sense of confinement. Machine colors vary from department to department. For the dirtier section where carbon black is processed, machinery guards are painted red, and elsewhere are painted orange. Electrical motors and their guards are painted red. Power presses, in order to counteract the visual effect of the shiny zinc they are working, are painted bottle-green, and their guards Indian red. "Hot" processes are counteracted by painting machinery light yellow.

Every machine in the shop is painted a different color and positioned so that the operator has a clear view of the whole shop. Here again the purpose is to lessen the sense of confinement. One immediate effect of the introduction of color to the plant was a marked reduction in the number of headaches treated in the first-aid room.

—*Target* (Central Office of Information, Norgeby House, Baker St., London W. 1.), in *The Management Review*, May, 1951.

Somapsychic Medicine

MEDICAL practice grows more and more wrapped in the obvious. The skin specialist concentrates on his x-ray treatments and his lotions. Child specialists worry mostly about canned milk and canned food and shots against diphtheria, tetanus and whooping cough. Obstetricians go into a huddle about drugs to relieve pain instead of preparing women to reach the bodily perfection that might make childbirth a normal function. Surgeons try to cut out or, with needle and thread, alter what we find objectionable. Internists with their needles want to improve our glands or restore organs beyond repair. Psychiatrists arrange our complexes into some kind of order, at times having to push and pull in order to fit them to their theories. We country doctors sit around and hope for the best, and await the next antibiotic that will cure all ills of the flesh and spirit. It begins to look to me as if we need a lot of change in medical practice. From my view of things the path appears something like this. We might start with the soil and begin to produce quality as well as quantity in our edible plants, and the same in our animals and animal products that we use for food. Next we could call a halt on most types of food processing. We must abandon our present policy of allowing our foods to be processed to death. At the moment the whim of any company decides what to take out or what to add to our so-called foods. The only apparent limit to what a food processor can do seems to be what we can prove is actually poisonous. Right now we seem to act on the principle that we cannot ban any depletion of a natural food or the addition of any chemical to 'food' until many research men prove the change actually harmful. It was not until research proved that removing the hulls of rice killed and sickened countless humans that we even questioned this processing. We had to wait until 'butter yellow' was shown to produce cancer in animals to get this dye stopped. Not until 'agene' proved too well its ability to atrophy brain cells and kill dogs did we inquire as to its wisdom in flour for human use. Some day we must put a limit to the advertising that persuades housewives to buy and feed us the food trash that fills magazine pages with its false claims. Or, failing that, we doctors must lift our timid voices in protest against all the hokum advertising about processed foods. Finally we must begin to educate ourselves and our patients on what foods have real nutritive value, how to keep them in our homes, and how to serve them. Most of our families do at least as much harm to food once in-

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—Lloyd F. Smith, M.D., Monrovia, California, in *Arizona Medicine*, March, 1951.

Gentleman—Physician

Bernardino Ramazzini published his book "De Morbis Artificum Diatriba" (Treatise on the Diseases of Workers). This was the first book in medical history to concern itself exclusively with the question of how a man's occupation may affect his health. It is the book which earned for Ramazzini the title "Father of Industrial Medicine." As a guide it is, of course, outmoded and even quaint. It abounds in such expressions as "humors" and "juices," writes Joseph Brown in *The Merck Report*. One would not study it today for its medical value. But if one were to read it for pleasure, if one were to read it to gain an insight into life in seventeenth-century Europe, if one were to read it to acquaint himself with the workingmen and tradesmen of a typically European town just emerging into the modern industrial world, or if one were to read it to make the acquaintance of a charming and erudite physician, a gentleman and a scholar, then he would be amply rewarded. For to read Ramazzini's "Treatise" is to be in the company of a gentlemen-physician who represented the best of what his particular culture, and medical science at that time, had to offer. As we read his book, we can almost imagine ourselves being led about the little town of Modena, Italy, where Ramazzini spent most of his life and where he had a lucrative practice as court physician to Duke Francesco III and his entourage. To his colleagues and friends among the nobility, Ramazzini might have appeared to be somewhat eccentric—the perfumed, silken-clad aristocrat who preferred to spend much of his time in the poorer sections of town, hobnobbing with ditch diggers, chimney-sweeps, old-rag men and sailors, plying them with questions about their work, their diet, their way of life. But his "Treatise," which is the result of his wanderings in the working-class districts of Modena, not only preserves a phase of life in the seventeenth-century town but also lays a basis for study of industrial medicine.

—*New York Herald-Tribune*, May 15, 1951.

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Gulf Coast Conference

THE Fourth Annual Gulf Coast Regional Conference on Industrial Health will be held at the Rice Hotel in Houston, Texas, September 27-29, 1951.

Sun Exposure

TANNING is often impossible for those with fair skin and blue eyes. Even dark-skinned people are easily over-exposed and the combination of coal tar products with ultra-violet light in anyone can be dangerous. Tanning lotions prevent passage of ultra-violet rays to the skin and are called chemical parasols. But combination of chemical parasols with cosmetics such as perfume or hair dye may increase response to ultra-violet rays. Sun exposure should be avoided when taking medicine, particularly of the coal tar variety. Aspirin is of this latter category. Exposure to those parts to which other chemicals have been applied should also be avoided. An ice-cold mixture of equal parts of vinegar and water is recommended for sunburn. Boiled starch paste or a teaspoon of boric acid in a pint of ice water will also help sunburn.

—"Hidden Dangers in Sun Tan," by HERMAN GOODMAN, M.D., in *Your Life*, June, 1951; abstr. in *Medicine in the News* (Schering), May, 1951.

Religious Pressure

A BILL to authorize the addition of fluorine to drinking water in California was defeated in a test vote in the state legislature. The dispatch from Sacramento noted that the majority acted in accordance with the wishes of spokesmen for the Christian Science church.

—*Chicago Tribune*, June 18, 1951.

Detects Cancer Cells

A NEW diagnostic machine makes cancer cells expose themselves if they are present in smears of human body fluids. Devised by Dr. Robert C. Mellors, Sloan-Kettering Institute for Cancer Research, New York City, and his associates, it was described at the American Association for Cancer in Cleveland. The apparatus takes advantage of the fact that cancer cells have a great hunger for certain dyes which glow when bombarded by ultra-violet rays. Light given off is scanned by the machine at a rate of 100,000 a minute. Every emanation given off by a cell stained with fluorescent dye is picked up by a microscope and converted into an electric impulse by means of vacuum tubes hooked into an electronic circuit. The cells are being harnessed to run a tabulating attachment which is actuated only by a greater electrical output generated by the more brightly glowing cancer cells. The machine takes little more than two square feet of space and can be built for $2,000. Dr. Mellors spent two years perfecting the device and hopes to have it ready for use by the medical profession in 90 days.

—*Hospital Topics*, June, 1951.

Naval Industrial Health

THE third annual Naval Industrial Health Conference held April 22 to 27 in Atlantic City, was attended by 116 delegates from the naval industrial plants,

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slow healing **wounds**
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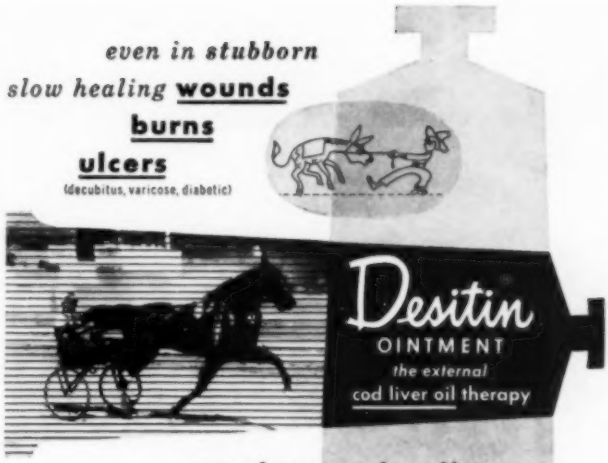

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1. Behrman, H. T., Combes, F. C., Bobroff, A., and Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.

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the shipyards, air stations, ordnance plants, research centers, and supply depots that exist to provide the logistic support for the fleet. Among the delegates were naval officers who are responsible for the guidance of the navy's industrial health program, as well as civilian industrial hygienists, nurses, and safety personnel. Representatives from the U.S. Air Force, U.S. Army, Royal Navy, and the Royal Canadian Navy were also present. With more than 250,000 civilian employees in its industrial plants and a combination of industrial hazards common to shipbuilding, ordnance, air, and research industries, ranging from exposure to industrial solvents to ionizing radiation, the navy has found it necessary to keep abreast of the latest developments in the field of industrial medicine and hygiene. The occupational health program provided the thousands of employees is more than mere compliance with laws and directives —it is recognized today as being a contribution to production. The conference constituted a concentrated post-graduate course for the officers and civilians who are providing a health service that is contributing to the productive efficiency of the navy industrial facilities, a health program that is gaining recognition as being comparable to the best in private industries of comparable size and complexity.

—*J.A.M.A.*, May 19, 1951.

Symposium on Aging

PHILIP N. SCHEID, Director of Training for the Pullman-Standard Car Manufacturing Company, Chicago, addressing a Symposium on Aging, held at the 100th annual convention of the American Medical Association, at Atlantic City, said that new "retirement separation"

programs undertaken by industry, range from that of the Mohawk Development Service, an independent concern which consists of retired employees of a large electric corporation, to the "step-down" plan of the Wrigley Corporation, in which aging employees are granted successively increasing leaves of absence for a gradual adjustment to the retired status. At the Ithaca Gun Company (New York) on the other hand, employees are permitted to continue as long as they are qualified. DR. LEONARD HIMLER said that intelligent social planning can reduce the number of those committed to mental institutions. "Commitment should be considered only as a last resort for those patients who show destructiveness, marked depression, delusions and resistiveness." An overwhelming majority of the aged retain their mental faculties to the full; one study showed that only 3.8% of those over 65 had mental disability. Geriatric psychiatry is constantly extending its preventive arm to those who once would have been committed to mental hospitals. DR. S. CHARLES FRANCO said that if industry continues its present retirement practices, it will be faced with a seriously depleted labor pool, and top-heavy pension costs. Since the turn of the century, the number of those over 65 has quadrupled while the population has only doubled. He urged rehabilitation of workers of any age who are chronically disabled by heart disease, arthritis and tuberculosis, so that their remaining physical capacities may be used and their working life-span lengthened. "Very worthwhile results have been obtained by retraining of handicapped workers.

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1. Hoffman, Murray M., Ill. Dent. Jl., 19:439-445 (Oct., 1950)

2. McNealy, Raymond W., Ill. Med. Jl., 97:150 (Mar., 1950)

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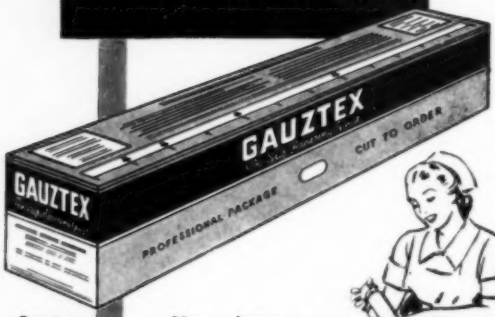

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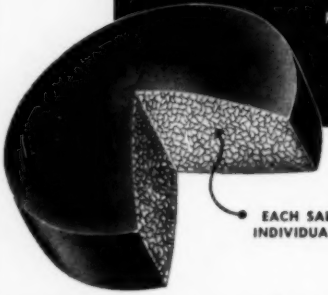

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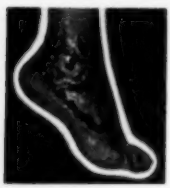

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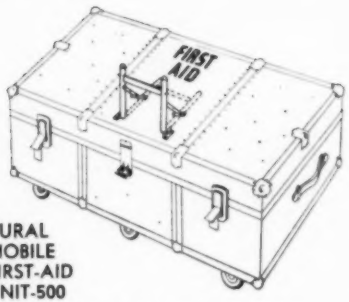

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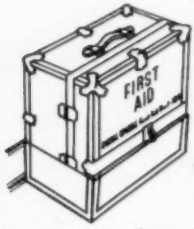

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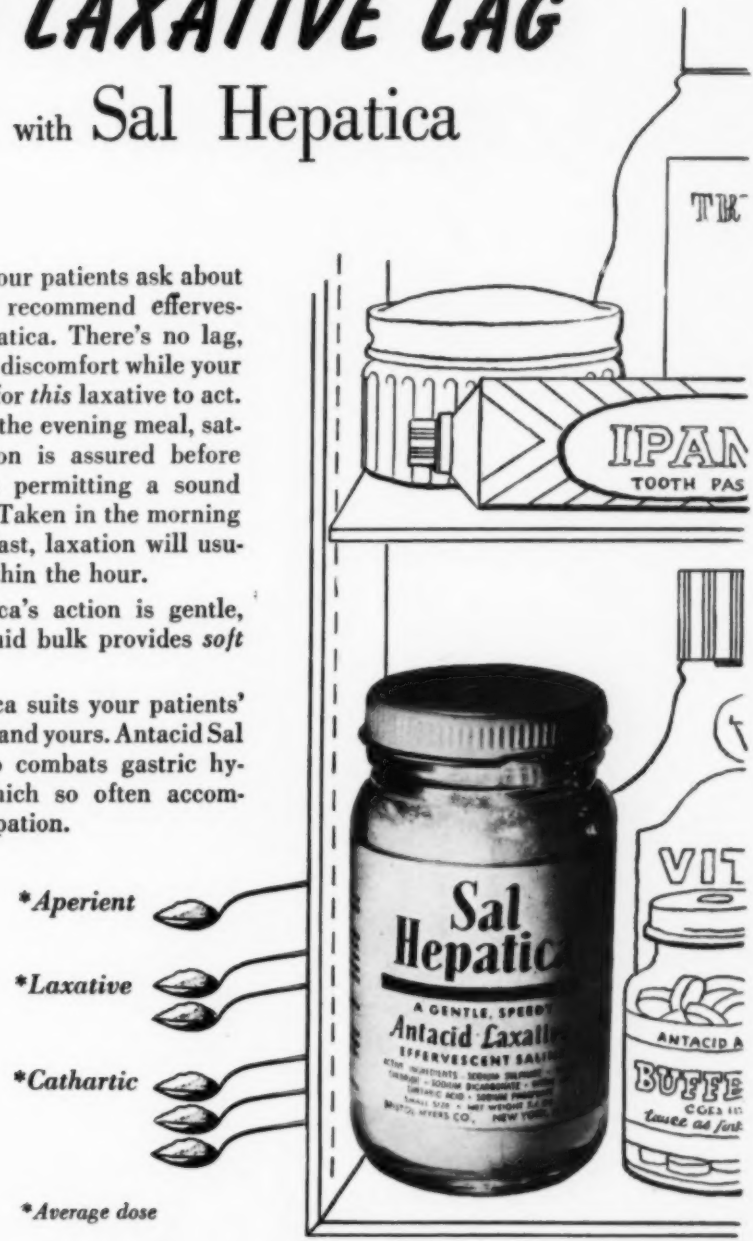

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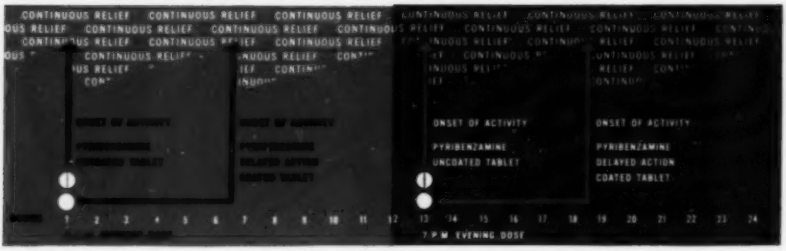

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